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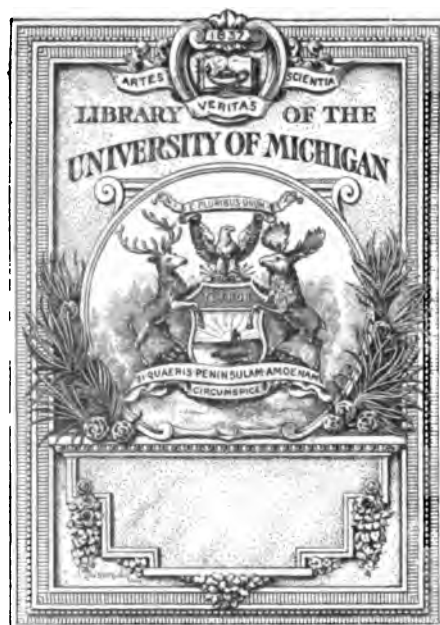
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R E P O R T S
FROM
COMMISSIONERS, INSPECTORS,
AND OTHERS:

THIRTY-SEVEN VOLUMES.

— (29J)—PART II.—

METROPOLITAN WATER SUPPLY (*continued*).

Session 1.—30 *January* 1900 — 8 *August* 1900.
Session 2.—3 *December* 1900 — 15 *December* 1900.

VOL. XXXVIII —PART II.

1900.

R E P O R T S
FROM
COMMISSIONERS, INSPECTORS,
AND OTHERS:
1900.

THIRTY-SEVEN VOLUMES:—CONTENTS OF THE
TWENTY-NINTH VOLUME.—PART II.

N.B.—*THE* Figures at the beginning of the line, correspond with the N° at the foot of each Report ; and the Figures at the end of the line, refer to the MS. Paging of the Volumes arranged for *The House of Commons*.

METROPOLITAN WATER SUPPLY (ROYAL COMMISSION)
(continued).

[Cd. 198.] Minutes of Evidence taken before Her Majesty's Commissioners appointed to inquire into the subject of the Water Supply within the limits of the Metropolitan Water Companies ; with Index to the Minutes of Evidence laid before the Commissioners. Vol. II. p. 1

ROYAL COMMISSION ON WATER SUPPLY WITHIN THE
LIMITS OF THE METROPOLITAN WATER COMPANIES.

MINUTES OF EVIDENCE

TAKEN BEFORE

HER MAJESTY'S COMMISSIONERS

APPOINTED BY HER MAJESTY IN COUNCIL

ON THE WATER SUPPLY WITHIN THE LIMITS OF THE
METROPOLITAN WATER COMPANIES.

AND

INDEX TO THE MINUTES OF EVIDENCE LAID BEFORE THE COMMISSIONERS.

VOLUME II.

PRESENTED TO PARLIAMENT BY COMMAND OF HER MAJESTY.



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**ROYAL COMMISSION ON WATER SUPPLY WITHIN THE LIMITS
OF THE METROPOLITAN WATER COMPANIES.**

MINUTES OF EVIDENCE

TAKEN BEFORE

HER MAJESTY'S COMMISSIONERS

APPOINTED TO INQUIRE INTO THE SUBJECT OF THE

WATER SUPPLY

WITHIN THE LIMITS OF THE

METROPOLITAN WATER COMPANIES;

WITH

**INDEX TO THE MINUTES OF EVIDENCE LAID BEFORE THE
COMMISSIONERS.**

VOLUME II.

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1900.

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ROYAL COMMISSION ON WATER SUPPLY WITHIN THE LIMITS OF THE METROPOLITAN WATER COMPANIES.

LIST OF WITNESSES EXAMINED BY THE COMMISSIONERS.

Name.	Description.	Date.	Vol.	Page.	Question.
Alexander, Hugh -	Chief Sanitary Inspector of the Parish of St. Leonard, Shoreditch.	May 9, 1898 -	I.	440	8781.
Arnold, Sir Arthur -	Alderman and Ex-Chairman of the London County Council.	April 25, May 2, 1898 -	I.	397	7669.
Banbury, Frederick George, M.P.	Trustee and Manager of the Stock Exchange.	July 18, 1898 -	I.	688	18,698.
Bigwood, James -	Chairman of the Parliamentary Committee of the Middlesex County Council.	June 27, 1898 -	I.	558	11,452.
Binnie, Sir Alexander	Chief Engineer to the London County Council.	January 17, 18, 24, 31, May 16, 23, June 6, November 15, 1898, and January 30, 1899.	I. and II.	61; 457; 83; 317; 589	846; 9,209; 16,926; 23,113; 30,213.
Bonnor-Maurice, Edward Arthur.	Solicitor to the Chelsea, Grand Junction, East London, and Southwark and Vauxhall Water Companies.	March 14, 1899 -	II.	589	
Boulnois, Edmund, M.P. -	Chairman of the West Middlesex Waterworks Company.	February 13, 1899 -	II.	415	25,622.
Bowles, Henry Carrington Bowles.	Governor of the New River Company -	January 23 and 24, 1899 -	II.	282	22,260.
Bramwell, Sir Frederick, Bart., F.R.S.	Past-President of the Institutions of Civil Engineers and Mechanical Engineers.	December 13, 1898 -	II.	197	20,298.
Bryan, William Booth -	Engineer to the East London Waterworks Company.	November 7, 14, and 15, 1898; January 31, 1899.	II.	19; 43; 344.	15,862; 15,881; 23,888.
Cadoux, Gaston -	Chef de Bureau at the Prefecture of the Seine.	May 16, 1898 -	I.	450	9,073.
Clayton, Francis Stephen -	Governor of the Chelsea Waterworks Company.	February 27, 1899 -	II.	490	27,457.
Collins, Ernest -	Distributing Engineer to the New River Company.	November 7, and 15, 1898; March 7, 1899.	II.	3; 73; 554.	15,013; 16,700; 29,225.
Collins, John -	Member of the Board of Works for the Whitechapel District.	June 20, 1898 -	I.	587	11,128.
Corble, George -	Clerk to the Lea Conservancy Board -	March 7, 1899 -	II.	558	29,368.
Courthope, George John -	Chairman of the Parliamentary Committee of the Kent County Council.	July 4, 1898 -	I.	592	12,513.
Cripps, Henry Lawrence -	Parliamentary Agent to the London County Council.	November 22; December 6 and 13, 1897.	I.	1	1.
Crookenden, Isaac Adolphus	Secretary of the East London Waterworks Company.	February 6, 1899 -	II.	366	24,392.
Crookes, Sir William, F.R.S.	Water Analyst to the Metropolitan Water Companies.	January 17, 1899 -	II.	254	21,462.
Deacon, George Frederick -	Late Waterworks Engineer to the Corporation of Liverpool.	May 2 and 9, 1898 -	I.	413	8,177.
Dewar, Professor James, F.R.S.	Water Analyst to the Metropolitan Water Companies.	January 17, 1899 -	II.	262	21,710.
Dewey, William Francis -	Clerk to the Vestry of St. Mary, Islington.	May 9, 1898 -	I.	436	8,681.
Dickinson, Willoughby Hyett	Chairman of the Water Committee of the London County Council.	February 23; March 7 and 14, 1898.	I.	245	4,643.
Dickson, Alexander -	Secretary of the Kent Waterworks Company.	February 28; March 6, 1899	II.	516	28,171.
Dixon-Hartland, Sir Frederick, Bart., M.P.	Chairman of the Thames Conservancy.	March 6, 1899 -	II.	537	28,684.
Dyke, Sir William Hart, Bart., M.P.	Chairman of the Kent Waterworks Company.	February 28, 1899 -	II.	511	28,103.
Eaton, Edward Michael	Civil Engineer -	January 16, 1899 -	II.	247	21,391.
Evans, Sir John, K.C.B. -	Vice-Chairman of the Hertfordshire County Council.	July 11, 1898 -	I.	626	13,438.
Francis, Joseph -	Engineer to the New River Company -	November 15, 1898; January 24, 1899.	II.	80; 301.	16,807; 22,756.
Frankland, Sir Edward, K.C.B., F.R.S.	Official Water Analyst -	January 17; March 6, 1899	II.	271; 540.	21,950; 28,775.
Gill, George Henry -	Secretary of the Chelsea Waterworks Company.	February 27 and 28, 1899 -	II.	498	27,727.
Goldney, Gabriel Prior -	Remembrancer to the Corporation of the City of London.	March 28; April 18 and 25, 1898.	I.	354	6,541.
Gomme, George Laurence -	Statistical Officer of the London County Council.	February 14, 15, and 21, 1898.	I.	179	3,058.
Groves, Charles Edward -	Chemist to the Thames Conservancy -	January 23, 1899 -	II.	275	21,998a.
Hack, Richard -	Engineer to the Chelsea Waterworks Company.	November 15, 1898; March 7, 1899.	II.	71; 549.	16,630; 29,033.
Halsey, Edward Joseph	Chairman of the Surrey County Council	June 27, 1898 -	I.	568	11,885.
Harris, Frederick Ernest	Treasurer of the County Borough of West Ham.	July 11, 1899 -	I.	620	13,214.
Haward, Harry Edwin -	Comptroller of the London County Council.	January 31; February 1 and 7, 1898.	I.	132	2,242.

Name.	Description.	Date.	Vol.	Page.	Question.
Hawksley, Charles -	Civil Engineer -	December 19, 1898; January 16, 1899.	II.	212	20,640.
Hervey, Matthew Wilson -	Engineer to the West Middlesex Waterworks Company.	November 15, 1898; February 14, 1899.	II.	66;	16,467;
Hills, Henry George -	Clerk to the Wandsworth District Board of Works.	May 9, 1898 -	I.	435. 445	26,080. 8,918.
Hollams, John -	Solicitor to the Associated Metropolitan Water Companies.	November, 7 and 8; March 13, 1899.	II.	20;	15,386;
Hunter, Walter -	Engineering Director of the Grand Junction Waterworks Company.	November 8; December 12 and 13, 1898.	II.	570. 35;	29,716. 15,686;
Ivey, William -	Mayor of the Borough of West Ham -	July 11, 1898 -	I.	181	19,913.
Johnston, Andrew -	Chairman of the Essex County Council	July 11, 1898 -	I.	615	13,070.
Kidd, Charles Newman -	Chairman of the Dartford Urban District Council.	July 11, 1898 -	I.	606	12,873.
Knight, Sir Henry -	Chairman of the Southwark and Vauxhall Water Company.	July 4, 1898 -	I.	600	12,702.
Knight, Thomas Loonan -	Chairman of the East Ham Urban District Council.	November 8, 1898; February 6 and 7, 1899.	II.	29;	15,542;
Latham, Baldwin -	Civil Engineer -	July 11, 1898 -	I.	373. 624	24,567. 13,349.
Leete, William Chambers -	Clerk to the Vestry of the Parish of St. Mary Abbots, Kensington.	March 13, 1899 -	II.	583	30,051.
Littler, Ralph Daniel Makinson, C.B., Q.C.	Chairman of the Middlesex County Council.	June 20, 1898 -	I.	531	10,988.
Lockwood, Lieut.-Col. Mark, M.P.	Chairman of the East London Waterworks Company.	June 13 and 20, 1898 -	I.	508;	10,454;
Lubbock, Sir John, Bart., M.P.	Alderman and Ex-Chairman of the London County Council.	January 30 and 31, 1899 -	II.	545. 837	11,344. 23,657.
Marriott, William Kenaz -	Chairman of the Barking Urban District Council.	March 14 and 21, 1898 -	I.	310	5,713.
Martin, Howard -	Chairman of the Water Committee of the County Borough of Croydon.	July 11, 1898 -	I.	621	13,267.
Middleton, Reginald Empson	Civil Engineer -	July 4, 1898 -	I.	576	12,027.
More, Charles James -	Engineer to the Thames Conservancy -	July 18 and 25; November 22, 28 and 29; December 5, 12, 1898.	I. and II.	658;	14,212;
Morris, William -	Engineer to the Kent Waterworks Company.	January 30, 1899 -	II.	87.	17,007.
Mullen, Robert Gordon -	Clerk to the Guardians of the Bromley Union.	November 15, 1898 -	II.	329	23,378.
Murphy, Shirley Forster -	Medical Officer of Health for the Administrative County of London.	July 4, 1898 -	I.	77	16,733.
Musgrave, Christopher George	Chairman of the Leyton Urban District Council.	July 11, 1898 -	I.	608	12,830.
Norman, Frederick Henry -	Clerk to the Bromley Urban District Council.	July 11, 1898 -	I.	414	8,077.
Plant, Alfred -	Accountant to the East Ham Urban District Council.	July 11, 1898 -	I.	624	13,373.
Parkes, Thomas Farmer -	Engineer to the Lambeth Waterworks Company.	November 8, 1898 -	II.	41	15,841.
Randell, Reginald Maurice Henry.	Chairman of the Water Committee of the Beckenham Urban District Council.	July 4, 1898 -	I.	596	12,582.
Restler, James William -	Engineer to the Southwark and Vauxhall Water Company.	November 7 and 8, 1898; February 13, 1899.	II.	15;	15,377;
Searle, James -	Clerk of the New River Company -	January 24, 1899 -	II.	39;	15,807;
Smith, Urban Armstrong -	Surveyor and Engineering Adviser to the Hertfordshire County Council.	March 13, 1899 -	II.	408. 298	25,280. 23,616.
Stoneham, Allen -	Official Auditor -	July 18, 1898 -	I.	572	29,736.
Tendron, Frederick -	Chairman of the Grand Junction Waterworks Company.	February 14 and 20, 1899 -	II.	653	14,065.
Waring, Arthur Thomas -	Chairman of the Dartford Rural District Council.	July 4, 1898 -	I.	440	26,263.
Watney, Theodore -	Chairman of the Water Committee of the Borough of Richmond.	July 4, 1898 -	I.	601	12,733.
Weeden, Henry -	Vice-Chairman of the Ilford Urban District Council.	July 4, 1898 -	I.	586	12,336.
Whitaker, William, F.R.S. -	Late Senior Officer on the English Staff of the Geological Survey.	July 18, 1898 -	I.	635	13,615.
Whiter, Salter -	Chairman of the Croydon Rural District Council.	March 7, 1899 -	II.	546	28,928.
Whitmore, Charles Algernon, M.P.	Alderman of the London County Council.	July 4, 1898 -	I.	582	12,191.
Whittingham, Walter Basden	Chairman of the Water Committee of the Essex County Council.	March 21 and 28, 1898 -	I.	334	6,109.
Wilkins, Harry -	Secretary of the Lambeth Waterworks Company.	July 11, 1898 -	I.	613	13,015.
Wybroo, Frank Henry	Secretary of the West Middlesex Waterworks Company.	February 20, 21, and 27, 1899.	II.	450	26,570.
		February 14, 1899 -	II.	424	25,834.

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Date.	Name.	Description.	Page.	Question.
THIRTY-SECOND DAY. November 7, 1898 -	Mr. Ernest Collins -	Distributing Engineer to the New River Company.	3	15,013
	Mr. James William Bestler -	Engineer to the Southwark and Vauxhall Water Company.	15	15,277
	Mr. William Booth Bryan -	Engineer to the East London Waterworks Company.	19	15,362
	Mr. John Hollams -	Solicitor to the Associated Metropolitan Water Companies.	20	15,386
THIRTY-THIRD DAY. November 8, 1898 -	Mr. John Hollams -	"	24	15,457
	Sir Henry Knight -	Chairman of the Southwark and Vauxhall Water Company.	29	15,542
	Mr. Walter Hunter -	Engineering Director of the Grand Junction Waterworks Company.	35	15,686
	Mr. James William Bestler -	Engineer to the Southwark and Vauxhall Water Company.	39	15,807
	Mr. Thomas Farmer Parkes -	Engineer to the Lambeth Waterworks Company.	41	15,841
THIRTY-FOURTH DAY. November 14, 1898 -	Mr. William Booth Bryan -	Engineer to the East London Waterworks Company.	43	15,881
THIRTY-FIFTH DAY. November 15, 1898 -	Mr. William Booth Bryan -	"	62	16,380
	Mr. Matthew Wilson Hervey -	Engineer to the West Middlesex Waterworks Company.	66	16,467
	Mr. Richard Hack -	Engineer to the Chelsea Waterworks Company.	71	16,630
	Mr. Ernest Collins -	Distributing Engineer to the New River Company.	73	16,700
	Mr. William Morris -	Engineer to the Kent Waterworks	77	16,733
	Mr. Joseph Francis -	Engineer to the New River Company	80	16,807
	Sir Alexander Binnie -	Chief Engineer to the London County Council.	83	16,926
THIRTY-SIXTH DAY. November 22, 1898 -	Mr. Reginald Empson Middleton.	Civil Engineer	87	17,007
THIRTY-SEVENTH DAY. November 28, 1898 -	Mr. Reginald Empson Middleton.	"	103	17,562
THIRTY-EIGHTH DAY. November 29, 1898 -	Mr. Reginald Empson Middleton.	"	125	18,193
THIRTY-NINTH DAY. December 5, 1898 -	Mr. Reginald Empson Middleton.	"	147	18,934
FORTIETH DAY. December 12, 1898 -	Mr. Reginald Empson Middleton.	"	169	19,519
	Mr. Walter Hunter -	Engineering Director to the Grand Junction Waterworks Company.	181	19,913
FORTY-FIRST DAY. December 13, 1898 -	Mr. Walter Hunter -	"	190	20,163
	Sir Frederick Bramwell, Bart., F.R.S.	Past President of the Institutions of Civil Engineers and Mechanical Engineers.	197	20,298
FORTY-SECOND DAY. December 19, 1898 -	Mr. Charles Hawksley -	Civil Engineer	212	20,640
FORTY-THIRD DAY. January 16, 1899 -	Mr. Charles Hawksley -	"	232	21,077
	Mr. Edward Michael Eaton -	"	247	21,391
FORTY-FOURTH DAY. January 17, 1899 -	Sir William Crookes -	Water Analyst to the Metropolitan Water Companies.	254	21,462
	Professor James Dewar -	"	262	21,710
	Sir Edward Frankland, K.C.B., F.R.S.	Official Water Analyst	271	21,950
FORTY-FIFTH DAY. January 23, 1899 -	Mr. Charles Edward Groves, F.R.S.	Chemist to the Thames Conservancy	275	21,998a
	Mr. Henry Carrington Bowles	Governor of the New River Company	282	22,260
FORTY-SIXTH DAY. January 24, 1899 -	Mr. Henry Carrington Bowles	Governor of the New River Company	296	22,571
	Mr. James Searle -	Clerk of the New River Company	298	22,616
	Mr. Joseph Francis -	Engineer to the New River Company	301	22,756
FORTY-SEVENTH DAY. January 30, 1899 -	Sir Alexander Binnie -	Chief Engineer to the London County Council.	317	23,113
	Mr. Charles James More -	Engineer to the Thames Conservancy	328	23,378
	Lieut.-Col. A. R. Mark Lockwood, M.P.	Chairman of the East London Waterworks Company.	337	23,657

Date.	Name.	Description.	Page.	Question.
FORTY-EIGHTH DAY. January 31, 1899 -	Lieut.-Col. A. R. Mark Lockwood, M.P. Mr. William Booth Bryan -	Chairman of the East London Waterworks Company. Engineer to the East London Waterworks Company.	840 344	23,751 23,888
FORTY-NINTH DAY. February 6, 1899 -	Mr. Isaac Adolphus Crookenden. Sir Henry Knight - - -	Secretary of the East London Waterworks Company. Chairman of the Southwark and Vauxhall Water Company.	366 373	24,392 24,567
FIFTIETH DAY. February 7, 1899 -	Sir Henry Knight - - -	" " "	388	24,765
FIFTY-FIRST DAY. February 13, 1899 -	Mr. James William Restler - Mr. Edmund Boulnois, M.P. -	Engineer to the Southwark and Vauxhall Water Company. Chairman of the West Middlesex Waterworks Company.	403 415	25,280 25,622
FIFTY-SECOND DAY. February 14, 1899 -	Mr. Frank Henry Wybrow - Mr. Matthew Wilson Hervey Mr. Frederick Tendron - -	Secretary of the West Middlesex Waterworks Company. Engineer to the West Middlesex Waterworks Company. Chairman of the Grand Junction Waterworks Company.	424 435 440	25,864 26,080 26,263
FIFTY-THIRD DAY. February 20, 1899 -	Mr. Frederick Tendron - Mr. Harry Wilkins - -	" Secretary of the Lambeth Waterworks Company.	444 450	26,372 26,570
FIFTY-FOURTH DAY. February 21, 1899 -	Mr. Harry Wilkins - -	" " "	464	26,964
FIFTY-FIFTH DAY. February 27, 1899 -	Mr. Harry Wilkins - - Mr. Francis Stephen Clayton Mr. George Henry Gill - -	Governor of the "Chelsea Waterworks Company. Secretary of the Chelsea Waterworks Company.	489 490 498	27,450 27,457 27,727
FIFTY-SIXTH DAY. February 28, 1899 -	Mr. George Henry Gill - Sir William Hart Dyke, Bart., M.P. Mr. Alexander Dickson -	" Chairman of the "Kent Waterworks Company. Secretary of the Kent Waterworks Company.	508 511 516	28,039a 28,103 28,171
FIFTY-SEVENTH DAY. March 6, 1899 -	Mr. Alexander Dickson - Sir Frederick Dixon-Hartland, Bart., M.P. Sir Edward Frankland, K.C.B., F.R.S.	" Chairman of the Thames Conservancy - Official Water Analyst - - -	528 537 540	28,447 28,684 28,775
FIFTY-EIGHTH DAY. March 7, 1899 -	Mr. William Whitaker, F.R.S. Mr. Richard Hack - - Mr. Ernest Collins - - Mr. George Corble - -	Late Senior Officer of the English Staff of the Geological Survey. Engineer to the Chelsea Waterworks Company. Distributing Engineer to the New River Company. Clerk to the Lea Conservancy Board -	546 549 554 558	28,928 29,033 29,225 29,368
FIFTY-NINTH DAY. March 13, 1899 -	Mr. John Hollams - - Mr. Urban Armstrong Smith - Mr. Baldwin Latham - -	Solicitor to the Associated Metropolitan Water Companies. Surveyor and Engineering Adviser to the Hertfordshire County Council. Civil Engineer - - -	570 572 583	29,716 29,736 30,051
SIXTIETH DAY. March 14, 1899 -	Mr. Edward Arthur Bonnor-Maurice.	Solicitor to the Chelsea, Grand Junction, East London, and the Southwark and Vauxhall Water Companies.	589	30,213

ADDRESSES OF COUNSEL.

SIXTY-FIRST DAY. March 20, 1899 -	Lord Robert Cecil - - Mr. Edward Henry Pember, Q.C. Mr. Edward Henry Pember, Q.C.	Representing the Hertfordshire County Council. Representing the Metropolitan Water Companies. " " "	591 598 608
SIXTY-SECOND DAY. March 21, 1899 -	Mr. Edward Henry Pember, Q.C.	" " "	681
SIXTY-THIRD DAY. March 22, 1899 -	Mr. Samuel Pope, Q.C. - Mr. Ralph Makinson Littler, Q.C. Mr. John Hutton Balfour Browne, Q.C.	" Representing the "Kent Waterworks Company. Representing the London County Council	648 654 667
SIXTY-FOURTH DAY. March 23, 1899 -	Mr. John Hutton Balfour Browne, Q.C.	" " "	676

MINUTES OF EVIDENCE

TAKEN BEFORE

HER MAJESTY'S COMMISSIONERS

APPOINTED TO INQUIRE INTO THE SUBJECT OF THE

WATER SUPPLY

WITHIN THE LIMITS OF THE

METROPOLITAN WATER COMPANIES.

Volume II.

THIRTY-SECOND DAY.

Monday, November 7, 1898.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Honourable JOHN WILLIAM MELLOR, Q.C.,
M.P.

Sir JOHN EDWARD DORINGTON, Bart., M.P.

Sir GEORGE BARCLAY BRUCE, Knt., C.E.

ALFRED DE BOCK PORTER, Esq., O.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.

ROBERT LEWIS, Esq.

CECIL OWEN, Esq., Secretary.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.

Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River Company.

Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.

Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.

Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Messrs. Bircham and Company appeared for the Southwark and Vauxhall Water Company.

15,012. (*Chairman.*) I presume the counsel are aware that we propose to deal first with a separate and small subject, namely, that of inter-communication between the different companies. The President of the Local Government Board has written to me officially to ask that we should deal with that, and report upon it as soon as possible; so we propose to interrupt the course of the evidence to that extent.

(*Mr. Pope.*) No doubt the Commission are aware that since the communication on the part of the Commission to the companies that that would probably be the course which the matter would take this morning, the companies have met and have carefully considered what their position should be with regard to that. They are prepared, of course, to offer to the Commission general evidence as to the practicability of such a matter; but it involves so many small considerations of detail both as regards the engineering requirements the particular points where connexion should be made, and so on, and the general legal bearings of the question, that it has appeared to them that it would be desirable to save the time of the Commission rather by directing their evidence, if they should be called upon for any, to the general question rather than to ask you to go into a long inquiry in detail as to any particular scheme of connexion. But

further, I daresay the Commission are aware that the result of inter-communication between the companies has been that they have come to the conclusion that it would be a convenience, and, therefore, as a convenience, they would undertake the duty to promote in the next session of Parliament a Bill obviating these questions of detail. For instance, without legislation, of course the companies could not be relieved from their statutory obligations to apply their powers only to the purposes of their own district, and especially from those particular obligations which bind individual companies not to supply water to adjoining companies. All that would have to be dealt with, of course, by legislation; and I am instructed upon the part of the associated companies to call the attention of the Commission to a series of resolutions which they came to, which in general terms express what their views will be with regard to such legislation; and to say at once that their view, putting it briefly, would be this—that while a scheme of inter-communication is perfectly practicable, it would be desirable that some authority should be armed with power to say how and in what way that connexion should be made, not merely at the time when the emergency might arise for it, but anticipating the necessity for any such inquiry. They would suggest that the matter in detail might be left to the Local Government Board to decide, putting upon

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7 Nov. '98 the companies the obligation to carry out whatever decision the Local Government Board might come to with regard to the requirements for such connexion.

(*Chairman.*) We are asked, you know, to advise by whom and in what proportion the cost of connexion should be borne, and what are the legal powers necessary to give effect to the consideration. Therefore, I do not see that we can avoid making to the Local Government Board such suggestions as seem to us necessary.

(*Mr. Pope.*) Quite so. All those questions have been considered most carefully by the representatives of the companies, and, I believe, there has been furnished by one of those representatives—though, I think, it was intended to do it collectively—in the first instance, as a matter of respect to the Commission, the conclusions they have arrived at; but if you will allow me, I will hand in a copy.

(*Mr. Balfour Browne.*) May we have a copy?

(*Mr. Pope.*) Certainly (*handing in copies of the Companies' proposals*).

(*Chairman.*) I have not seen this.

(*Mr. Pope.*) Have you not seen that, my Lord?

(*Chairman.*) No.

(*Mr. Pope.*) Perhaps it might be desirable that I should just read this; it would, perhaps, be better that I should read it rather than make any speech about it because it explains itself.

"The Companies propose to introduce a Bill in the next session of Parliament for the purpose of providing for and facilitating inter-communication between the mains and works of the respective Companies and the supply when needed of available or surplus water so as to avoid the risk of deficiency in times of unusual drought or accident. The Bill to contain, *inter alia* provisions to the following effect:—(1.) The companies forthwith to consider what works are required for the above objects, and to submit proposals to the Local Government Board for approval. The Local Government Board to be empowered to approve and authorise such works with or without modifications, or to authorise and order other works for the like objects. (2.) Further works for the above objects may in like manner be from time to time authorised and ordered if and when required. (3.) The respective companies to carry out in their respective districts all works so authorised. (4.) The Local Government Board to be empowered to authorise the supply of surplus water from the works of any company to the works of any other company for the time being requiring the same and the Local Government Board to have power in case of emergency to authorise any of the companies to take more water from the Thames than they are now authorised to take." I do not make any comment upon any of the provisions; that is a matter which might be, of course, the subject matter of some comment, but it might be that it should be done only in cases of emergency, or for temporary purposes, because, of course, the question of the taking of water from the river is rather a matter which Parliament will deal with itself. "(5.) All expenditure of the respective companies in relation to any such works to be deemed capital expenditure, and for the purpose of meeting such expenditure the Local Government Board to be empowered from time to time to authorise the respective companies to issue an additional amount of debenture stock. (6.) No contribution to any sinking fund to be made in respect of capital issued for the foregoing objects. (7.) Subject to reasonable contribution by any company taking and utilizing by means of the proposed works and powers, water which it would not otherwise have been enabled to take and utilize, the interest on debenture stock applied by the respective companies for the foregoing works to be borne by the eight companies in proportion to their respective water rentals. (8.) Any company taking water from another company to pay for such water to the company supplying it at a rate to be agreed upon or fixed by arbitration. (9.) A standing arbitrator to be appointed by the eight companies, or, failing such appointment, by the Local Government Board, and in case the respective companies do not agree amongst themselves, such arbitrator at the end of each year to decide as to the contribution of any company taking and utilizing the water rendered available by the proposed works, and also to decide

"any matters in difference between the companies." That seems to me to sum up the general provisions of the scheme which has been considered and agreed to by the companies among themselves, and which they are prepared to ask the sanction of Parliament for in the ensuing session.

(*Chairman.*) Yes, but I think the President of the Local Government Board will expect from us some criticisms of those proposals.

(*Mr. Pope.*) No doubt, and it is with that view that I ask your Lordship to take cognisance of them now. Of course, they are not final, but we are anxious to assist the Commission in this inquiry, and, therefore, we have put our collective views before the Commission in order to assist it in the inquiry, but, of course, by no means to bind the Commission to a final conclusion.

(*Chairman.*) I understand the eight companies concur?

(*Mr. Pope.*) Yes.

(*Mr. Littler.*) With regard to the Kent Company, the position of the Kent Company is a little different; subject to some particular criticism which I shall have to make when my turn comes, in the general outline we are at one, so that that may be regarded in that sense as a collective memorandum; but, still, there will be some matters of detail on which I may—I will not say I shall, but on which I may—have to ask the consideration of the Commission.

(*Chairman.*) The other companies are all agreed, are they?

(*Mr. Pember.*) Yes, as far as we are concerned.

(*Mr. Pope.*) I understand so.

(*Mr. Balfour Browne.*) Of course, having regard to the letter from the President of the Local Government Board, I quite understand your Lordship is going to depart from the course that you were taking, and to inquire into the matter that is raised in this memorandum.

(*Mr. Pope.*) That is so.

(*Chairman.*) Yes.

(*Mr. Balfour Browne.*) At the same time, of course, I understand the Commission will at some period return to the question of purchase?

(*Chairman.*) Yes, certainly.

(*Mr. Balfour Browne.*) Because the view that we take of the matter is this, that all this may become absolutely unnecessary if this Commission should take the view that purchase by a public authority is the right course to take. Of course, if it was going into the hands of, we will say, the County Council, or a Commission or any other body, this would be done by that body.

(*Chairman.*) Certainly.

(*Mr. Balfour Browne.*) And not by the companies?

(*Chairman.*) Yes.

(*Mr. Balfour Browne.*) That is all I want to point out, my Lord.

(*Chairman.*) Quite so. That is fully present to my mind, but I understand the Local Government Board to take the view, that immediate legislation of this kind—I will not say what it is to be—is expedient, whether purchase be ultimately resolved upon or not.

(*Mr. Balfour Browne.*) Yes, but at some period, of course—

(*Chairman.*) I think the Local Government Board will intend themselves to introduce legislation. It may be that they will adopt the Bill proposed by the companies—

(*Mr. Pope.*) That I do not know.

(*Mr. Balfour Browne.*) It is quite possible, but at some period, I suppose, we will have an opportunity of cross-examining Mr. Middleton.

(*Chairman.*) Certainly.

(*Mr. Pope.*) I do not understand that it is a shelving of the other question.

(*Chairman to Mr. Pope.*) This scheme that you have laid before us on behalf of the companies suggests some very novel powers. The Local Government Board, for instance, is to authorise the companies to take more water from the Thames than they are now authorised to take.

(*Mr. Pope.*) No doubt; in case of emergency.

(*Chairman.*) The capital to be raised by debenture stock is to be no contribution to the sinking fund.

(*Mr. Pope.*) Yes.

(*Chairman.*) The interest of that debenture stock is to be borne in certain proportions by the different companies.

(*Mr. Pope.*) Yes.

(*Chairman.*) I think Mr. Chaplin will expect us to offer him some criticism or advice on these subjects.

(*Mr. Pope.*) I think so.

(*Chairman.*) Therefore, that entails the support of these propositions by your witnesses.

(*Mr. Pope.*) I think your Lordship would probably call upon us to enforce these or to explain them, at all events, a little more at length than I have done, or than they do themselves, and give the reason why that appears to be a sound suggestion.

(*Chairman.*) Certainly.

(*Mr. Balfour Browne.*) I gather also, my Lord, from my learned friend's reading that it authorises the Local Government Board to authorise the companies to raise capital which would, of course, be a new departure. Parliament has been the authority to authorise new capital up to the present time.

(*Mr. Pope.*) That will be a new departure, certainly. Of course, without arguing it, the intention is that it should only be limited to the particular emergency.

(*Mr. Balfour Browne.*) So I gathered.

Mr. ERNEST COLLINS called and examined.

15,013. (*Chairman.*) You are distributing engineer to the New River Company?—I am.

15,013a. You have been in the employ of that company for 18 years?—Yes.

15,014. Are you a member of the Institution of Civil Engineers?—I am.

15,015. Have you attended to the question of the water supply of the Metropolis generally?—Of course, being connected with the New River Company, I have from time to time taken an interest in it, but I have been more directly employed by the New River Company.

15,016. Do you consider it practicable, from an engineering point of view, to connect the different systems of supply of the respective companies?—Quite practicable.

15,017. Are there any reasons in your judgment for limiting the connexion of the systems of supply to the two sides of the Thames, for instance, or in any other way?—I think that you must, of course, limit these connexions, and to a certain extent, in accordance with the quantity of water which there is to pass from one company to another. There must be some basis or foundation for the calculations as to quantities.

15,018. I am not quite sure that I follow you. You say it is practicable to connect the systems of all the companies?—Of all the companies, yes.

15,019. Very well, I am asking you whether there are any reasons of convenience, or of expense, or any engineering considerations that would make it more desirable to limit the connexion to a certain number of the companies only?—No, I think not. I think that as a general scheme the supplies of all the companies could very practically be made interchangeable.

15,020. (*Sir John Dorington.*) And should—you say could?—And could be done.

15,021. (*Chairman.*) Yes, but should they be?—Well, that depends, of course, upon circumstances. It is not for me to say whether they should be made. I say that it is practicable, and that they can be made.

15,022. (*Mr. De Bock Porter.*) Would you say that some of them have not an available surplus to dispose of?—Decidedly, some of them have no available surplus. Most of the companies have an available surplus during certain times of the year; but at the times of greatest supply hardly any of the companies have water to spare.

15,023. (*Chairman.*) Then what is the use of the inter-communication if none of them could supply any water to their neighbour?—That is the point which we have had to consider in drawing up this scheme which has been laid before you.

15,024. (*Major-General Scott.*) In this scheme, which was originally submitted to the Commission, have you taken into account the expense of the works which would be necessary to give you the surplus?—Yes, we have.

15,025. Is that included in the 300,000l.?—Yes.

(*Mr. Pope.*) Which is within the jurisdiction of the Local Government Board, of course, and it is to be only a sufficient amount of capital for that purpose.

(*Chairman.*) Is Mr. Collins here?

(*Mr. Pope.*) He is.

(*Chairman.*) We think it may be convenient first to get his evidence very shortly.

(*Mr. Pope.*) Yes my Lord. If your Lordship will forgive me, this has occurred to me. I should state we are prepared, of course, with the evidence of Mr. Collins and the other engineers, but I think if your Lordship or the Commission require or desire any explanation of the resolutions, Mr. Hollams who drew them up and who represents the associated companies in that respect, would explain why and what the reasons were which have led them to come to that form of resolution.

(*Chairman.*) Very well.

(*Mr. Pope.*) So that that would be about as short a way of dealing with it as possible. The engineering details your Lordship will go into with the engineers.

(*Chairman.*) We do not propose to go into the engineering details.

(*Mr. Pope.*) Quite so, of course, except merely to see that it is a practical thing that can be done.

(*Chairman.*) Then we will take Mr. Collins first.

(*Mr. Pope.*) If you please.

Mr. E.
Collins.

15,026. We have not yet got that figure. Could you give us shortly what will be the total cost of connecting the systems of all the companies?—Well, as far back as September 1897, the engineers of the various companies had instructions from their directors to meet together and to consider as to the practicability of making interchangeable connexions between all the companies; and perhaps I shall not be taking up too much time if I just briefly tell you how we arrived at that report which is now before you.

(*Mr. Balfour Browne.*) Forgive me; would you mind saying whether it is this report?

(*Mr. Pope.*) It is a report which was furnished to the Commission so long ago as October 1897; it was sent to the Commission in that month.

(*Mr. Balfour Browne.*) I have not seen it.

(*Mr. Pope.*) Have you not seen it?

(*Mr. Balfour Browne.*) No.

(*Mr. Mellor.*) I do not remember it.

(*Chairman.*) Is that the report you are alluding to Mr. Collins (*handing a print to the Witness*)?—Yes, that is the report to which I am alluding.

(*Mr. Balfour Browne.*) Perhaps you will let us have a copy of it, I have not seen it (*a copy was handed to the learned Counsel*).

15,027. (*Chairman.*) That report shall be put upon the notes, therefore I need not go through it with you.

The Witness handed in the following Report:—

To the Chairmen of the Metropolitan Water Companies.

REPORT of ENGINEERS of the LONDON WATER COMPANIES on the PROPOSAL to make INTERCHANGEABLE CONNECTIONS between the MAINS of the several COMPANIES.

The engineers of the eight London Water Companies have fully considered the above question with the view of ensuring a supply of water to all parts of the metropolis should the works of any company be temporarily disabled, or should the supply fail temporarily in any company's district.

Several junctions at present exist between the supply mains of some of the companies, which junctions have at times rendered good service, but after full discussion we feel it would be much more satisfactory if the service reservoirs of the companies were connected, where possible and advisable, by suitable mains, and that such additional pumping power as may be required should be provided. Help rendered by one company to another in this way would not interfere with the arrangements for the internal supply of each company's district, which would continue on ordinary lines and under the usual pressure.

In considering the subject we have based our calculations on provision of a maximum daily interchange of 10,000,000 gallons, but our suggestions would be equally applicable to any greater or less quantity, save that our estimate of cost would be effected.

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We have to submit the following proposals:—
On the north side of the Thames the five companies supplying the district are the Chelsea, the East London, the Grand Junction, the New River, and the West Middlesex.

NEW RIVER TO EAST LONDON AND VICE VERSA.

1st Connection.—Unfiltered Water.—As both these companies take water from the River Lee, the New River Company can, by closing their intake, allow, say 10,000,000 gallons per day to pass along to the East London Company's intake (this arrangement has been carried out on previous occasions).

2nd Connection.—Filtered Water.—By the provision of a 24 in. main in connection with the New River Company's new 36 in. pumping main from Green Lanes pumping station and the intake mains of the East London Company at their Hornsey Wood reservoir in Finsbury Park, 10,000,000 gallons per day could be pumped or delivered by gravitation from the New River to the East London Company, or the same 24 in. main could be utilised to pump 6,000,000 gallons daily from the East London to the New River Company.

3rd Connection.—An arrangement already exists by which water can be delivered by the East London Company to the New River Company from their 36 in. main in Seven Sisters Road into the New River.

NEW RIVER TO GRAND JUNCTION COMPANY AND VICE VERSA.

The Grand Junction Company have three reservoirs at Campden Hill, with a united capacity of 18,000,000 gallons. The daily consumption of water from these reservoirs is about 2,000,000 gallons, so that there is permanent storage of say 14,000,000 gallons available at this point, and it would appear that there is sufficient spare engine power at the Campden Hill works of the Grand Junction Company to pump about 10,000,000 gallons daily.

The water delivered to the New River Company by the Grand Junction Company would be delivered at such a level that it could again be passed to the various parts of the New River Company's district by gravitation.

4th Connection would be provided by a main from Campden Hill (Grand Junction) to Maiden Lane Reservoir (New River), a distance of 6½ miles. This main should be of 30 in. diameter, and could be utilised for pumping (say) 10,000,000 gallons daily from the Grand Junction Company to the New River Company, and the same main would be available for passing a similar supply from Maiden Lane to Campden Hill by gravitation.

NEW RIVER AND GRAND JUNCTION TO WEST MIDDLESEX COMPANY.

5th Connection.—The junction of the West Middlesex 30 in. main in the vicinity of Ladbroke Grove with the 30 in. main proposed in connection No. 4, would enable the New River Company to pass water to the West Middlesex Company by gravitation, and enable the Grand Junction Company to pump water to the 30 in. main (connection No. 4) into the district of the West Middlesex Company when such main was not in use for the New River Company.

WEST MIDDLESEX COMPANY TO GRAND JUNCTION COMPANY.

6th Connection.—A junction between the West Middlesex main in the vicinity of Campden Hill and the Grand Junction Company's Campden Hill Reservoir, would enable the West Middlesex Company to pass water to the Grand Junction Company, either for the assistance of that company or for passing on through the pumps at Campden Hill to the New River Company or elsewhere, as hereafter stated.

CHELSEA COMPANY TO GRAND JUNCTION COMPANY AND VICE VERSA.

7th Connection.—Between the Chelsea Company's reservoirs at Putney Heath and the Grand Junction Company's reservoirs at Campden Hill, would require a main of 30 in. diameter, by which 10,000,000 gallons per day could be delivered by gravitation from Putney Heath to Campden Hill, a distance of about four miles. The Grand Junction could assist the Chelsea Company by pumping the same quantity through the proposed main from their Campden Hill works.

GRAND JUNCTION COMPANY TO EAST LONDON COMPANY AND VICE VERSA.

8th Connection.—A connection already exists by which the Grand Junction Company can pump directly into the mains of the East London Company and vice versa.

The proposed interchangeable connections would enable the five water companies north of the Thames to assist each other in a case of emergency.

On the south side of the Thames the three companies supplying the district are the Kent, the Lambeth, and the Southwark and Vauxhall.

Two of these—the Lambeth and Southwark—draw from the Thames on opposite sides of the river at Hampton and at Molesey, whilst the Kent depend entirely on their deep wells in the chalk as the source of supply.

Owing to the manner in which the districts and the pipes of the three companies are interlaced, it is comparatively a simple matter to provide such connections as would enable the companies to afford mutual assistance to one another.

The surplus quantity of water to be interchanged in any one day would in no case exceed 10,000,000 gallons; and having regard to the similarity of the levels, it would not be necessary in the case of the Lambeth and Southwark to lay any special mains, as the trunk and principal distributing pipes of the two companies cross one another at several places, at which connections could be made.

The positions suggested for the connections are as follows:—

BETWEEN LAMBETH AND SOUTHWARK.

9th Connection.—At Raynes Park, where the 42 in. main of the Southwark and Vauxhall Company would be connected with the two 30 in. mains of the Lambeth Company.

This would enable the Southwark Company to assist the Lambeth Company, by affording a supply to their Brixton reservoirs.

10th Connection.—A connection at Leigham Court Road, Streatham, between the 21 in. main of the Lambeth Company and the 42 in. main of the Southwark Company. This would assist the Southwark Company.

11th Connection.—At Kennington Gate, a connection between the 20 in. and 24 in. mains of the Lambeth Company and the 30 in. and 24 in. mains of the Southwark Company.

This would be of mutual assistance, and capable of affording help to either company's district.

12th Connection.—At Manor Park, Streatham, a connection might be made between Streatham Works of the Southwark Company and the 12 in. main of the Lambeth Company. This would assist the Lambeth Company.

BETWEEN LAMBETH AND KENT.

It would be necessary to lay a short length of connecting pipes.

13th Connection.—To connect the 12 in. main of the Lambeth Company in Park Road, Forest Hill, with the 12 in. main of the Kent, at High Street, Lewisham. This would enable either company to assist in the supply of the adjoining portion of its neighbour's district.

14th Connection.—To connect the 12 in. main of the Lambeth Company at Beckenham with the 12 in. main of the Kent Company at Shortlands. This would enable either company to assist in the supply of the adjoining portion of its neighbour's district.

BETWEEN THE KENT AND THE SOUTHWARK AND VAUXHALL.

15th Connection.—The nearest point at which the larger mains of either company approach is in the Queen's Road, Peckham, where by laying less than a mile of 18 in. main the 16 in. main of the Kent Company could be connected with the 20 in. main of the Southwark. This would assist either company.

16th Connection.—If it should be thought desirable to still further extend the system of inter-communication and connect the southern with the northern companies, this might be done as between the Southwark and Chelsea Company, in the Upper Richmond Road, Putney, where the 24 in. mains of the Chelsea Company cross the 30 in. and 36 in. mains of the Southwark Company. This connection would afford mutual assistance to either company.

17th Connection.—At London Road, Kingston, where the 42 in. main of the Southwark Company crosses the 30 in. and 24 in. mains of the Chelsea. This connection would afford assistance to either company.

AS BETWEEN THE SOUTHWARK AND VAUXHALL AND THE EAST LONDON.

18th Connection.—By arrangement with the Hydraulic Power Company, who are believed to be the owners of the Thames Subway, a 20 in. main might be laid from the Southwark Company's 20 in. main in Tooley Street, to connect with the 20 in. mains of the East London Company in Commercial Road. This connection would afford mutual assistance to either company.

AS BETWEEN THE LAMBETH AND CHELSEA COMPANIES.

19th Connection.—A connection might be made at Surbiton between the 30 in. main of the Lambeth and the 30 in. main of the Chelsea Company. This connection would afford mutual assistance to either company.

20th Connection.—Another connection between the Lambeth and Chelsea companies might be made on Kingston Hill between the two 12 in. mains of the Lambeth and the 30 in. and 15 in. mains of the Chelsea. This connection would afford mutual assistance.

To make the scheme proposed complete it will be necessary to make provision for increasing the delivery of water from some of the companies' riverside works to the service reservoirs.

We estimate that the total expense of carrying out the whole of the foregoing proposals would be 307,867l. 10s.

In submitting this Report for your consideration we, the Engineers of the eight London water companies, have endeavoured to carry out the instructions received by us with regard to the feasibility of connecting the various mains of the different companies for use in periods of emergency.

We remain, &c.,
 ERNEST COLLINS.
 W. MORRIS.
 WILLIAM B. BRYAN.
 J. M. W. HEEVEY.
 THOMAS F. PARKES.
 RICHARD HACK.
 A. A. GILL.
 WALTER HUNTER.
 JAMES W. RESTLEE

London,
 18th October 1897.

15,028. (*Chairman to Witness.*) You were just saying the engineers considered whether the companies would have any surplus water to interchange or not?—That was the first question that we had to consider amongst ourselves.

15,029. Did you come to the conclusion what they would have or would not have in times of drought?—We came to this conclusion—we went through all the companies separately, and we found that the only company which practically had any surplus at times of greatest pressure was the Chelsea Company; they have powers for drawing from 8 to 10 million gallons more from the Thames than they were utilising in their district, and, therefore, we took that as a basis of our calculation as being the only quantity of water which was available in times of drought. These connexions were laid out with a view to transferring from one point to another a quantity not exceeding 10 million gallons per day.

15,030. Do you mean you came to the conclusion that all the companies between them at a time of pressure would be short of water except the Chelsea Company?—Not short of water for their own purposes.

15,031. But would have no water to spare?—Would not have any margin to spare.

15,032. Then that seems to strike at the desirability of inter-communication?—It does.

15,033. There is no use of inter-communication if there is nothing to communicate?—Precisely.

(*Mr. Pope.*) You will remember that had reference to October 1897. Since that date the Southwark and Vauxhall have obtained further powers which enable them in fact, notwithstanding the restriction, to extend assistance to the East London.

15,034. (*Chairman.*) You hear the counsel's suggestion; as an engineer, does your body of engineers endorse that?—The question of the Southwark and Vauxhall?

15,035. Yes?—Yes, the Southwark and Vauxhall had this year a surplus which they had not got available when this report was drawn up.

15,036. Will you bring us down to date; there are now two companies that have a possible surplus?—Yes.

15,037. Namely, the Chelsea and the Southwark and Vauxhall?—But I might be allowed to explain, perhaps, that the report which is before you drawn up in 1897 was drawn up previous to any events which have taken place lately.

15,038. Yes.—This proposal was drawn up with a view, not of providing for a breakdown or a partial or temporary failure of a source, but as an interchange of water for temporary purposes only, that is to say, supposing a pumping engine broke down or a main fractured or there were temporary displacements of works, then this scheme would be available at all times of the year. Sometimes we should have 20 million gallons to supply amongst us, but the most we should have at times of highest supply would be 10 millions. Therefore, this scheme prepared by the engineers was more a scheme to provide for temporary breakdowns, not as a permanent supply for six months to any one company who might require it. Of course, that opens a very much larger question.

15,039. You have not as yet conveyed to my mind what your view is about the Southwark and Vauxhall; you say the Chelsea Company have got an available surplus in times of pressure of from 8 to 10 million gallons; has the Southwark and Vauxhall got an available surplus?—Yes, they have.

15,040. To what amount?—I believe they have at present about 10 million gallons a day available.

15,041. That would make 20 millions?—Yes.

15,042. (*Mr. De Bock Porter.*) Is that likely to be absorbed by the increasing demands upon the area of the Southwark and Vauxhall Company?—I think not—not at present, anyhow. The Southwark and Vauxhall are in rather a peculiar position, and it is only owing to that position that they have this surplus water. They have been replacing their works—putting new works at Hampton with a view to dismantling their works at Battersea. Therefore, at Battersea, they have a large amount of temporary spare power which has enabled them to do a great deal for the East London this year. But, of course, if those works were dismantled, they would not be available.

15,043. It is an accident that they have the provision to make this year?—Well, it is a coincidence that they have duplicated their works at Hampton with a view of eventually dismantling the Battersea works.

15,044. (*Chairman.*) But what I understood Mr. Pope to suggest, was that they had powers of drawing an additional quantity of water, not merely extra works, but more water?—They have power of drawing an extra quantity of water, but not power, I believe, of inter-sale amongst the other companies.

(*Mr. Pope.*) No, inter-sale is absolutely prohibited.

(*Witness.*) Yes.

(*Mr. Pope.*) That was what I meant when I said there were restrictions that required relaxation before the scheme could be carried out.

15,045. (*Chairman.*) Yes. Can you tell me what quantity of foreign water has been, during the last two or three months, supplied to the East London Company?—Yes. The New River Company have during the temporary difficulties of the East London Company supplied them with 6 million gallons per day. At the present moment we are, through the West Middlesex, the Grand Junction, and the New River, together supplying between eight and nine million gallons per day to the East London Company.

15,046. (*Mr. Balfour Browns.*) You and the other companies?—The Grand Junction and the West Middlesex and ourselves.

15,047. (*Mr. De Bock Porter.*) Does the eight millions include the six millions, or is the eight millions beyond the six millions?—No, the eight millions includes the six millions. Then they have received assistance from the Kent Company.

15,048. (*Chairman.*) To what extent?—I believe to about half a million gallons a day. The Kent Company's mains are small in that district, and they could not pass more. From the Southwark and Vauxhall Company, I have been given to understand, they were receiving about six million gallons a day.

15,049. That is 14½ million gallons, in all, a day?—Yes.

15,050. (*Sir John Dorington.*) Has that supply diminished the efficiency of the supply in the districts of those particular companies that are giving assistance?—Not a bit.

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15,051. So that there has actually been 14 million gallons a day, the surplus of other companies, given to the East London?—Pardon me—by connexions which have been made which were anticipated in this report.

15,052. (*Major-General Scott.*) Does the connexion with the Grand Junction and the West Middlesex Companies give you only two million gallons a day?—No. At the present moment we are taking in at the rate of five million gallons a day from the Grand Junction and the West Middlesex Companies.

15,053. And giving six million gallons yourselves?—Not six, we are giving three ourselves at present. We have plenty of water to spare to give, but we have to stop some of our pumping engines to get ready for next season, so we are not giving the whole of our six millions.

15,054. (*Chairman.*) I do not propose to go through the details of these suggested connexions, but do you still abide by what is contained in your report of 1897 as being the best mode of effecting this inter-communication?—No, I do not.

15,055. Then what is the use of it? Have you got another scheme?—I do not say it is the best. I say, as a temporary matter, it would answer its purpose, but do not say it is the best mode, because so many things have to be considered. We have to consider as to what powers we are to take or what powers we have of getting the water to distribute.

15,056. (*Mr. De Bock Porter.*) Does the experience of the past year materially modify this proposal?—Well, it does to a certain extent. It modifies it so far as this—that it points to the great efficiency of the seven companies in carrying out their duties to the public, and the failure of the one. The whole of the help that is necessary is required for that one company. I mean to say that although these connexions are perfectly practicable to make, it is very questionable to my mind, and to the other engineers as well, as to whether it is absolutely necessary—as regards the seven companies. If these connexions were made between the seven companies, leaving the East London out of the question, I do not believe that they will ever be required; each company is quite capable of taking care of itself. Might I explain this, to give you an instance of the New River Company's works.

15,057. Yes.—We are duplicated and triplicated all through our district. From each of our pumping stations into each of our principal reservoirs all our works are in triplicate; and if one main breaks, or if one engine breaks, we have two to spare; if two break, we have one to spare. So the question is, how far is this interchange to go on. If we are triplicated all through, are we to go four times, five times, or six times? Of course, I am not suggesting it as a failure of the source of supply; I am suggesting it as a temporary breakdown of machinery, and I want you to see the difference between the two.

15,058. You say this is not, in your view, the best mode of establishing inter-communication between the works of the different companies?—No, it is not.

15,059. Have you got any scheme which you consider the best?—Yes, I know of a scheme. I am not authorised to put it forward as a scheme that has been approved by the boards of directors in any way, but I certainly know of a great many ways in which connexions could be made that would meet emergencies.

15,060. (*Chairman.*) Might I ask what reasons the engineers had for not laying the best scheme before us, but laying a scheme which you come and say is imperfect?—Well, my Lord, it was made 12 months ago, and circumstances have altered. I say this is a very good scheme in itself.

15,061. (*Sir John Dorington.*) For temporary purposes?—For temporary purposes; if you want a more permanent scheme, of course, it means a very much larger outlay and further consideration.

15,062. (*Chairman.*) The outlay, I see, for this scheme that you now throw cold water upon is 307,867l. 10s. p.—Yes.

15,063. (*Mr. De Bock Porter.*) But at the same time you say, do you not, that even if this scheme were carried out, a great many of these interchanges would not take place?—Would not be required.

15,064. (*Sir George Bruce.*) Is this document, which is signed by all you gentlemen, engineers, a document that you say is an imperfect and inefficient one?—I do not say it is imperfect.

15,065. But is this the document you meant?—That is the document, but I do not say it is inefficient or imperfect.

15,066. It is dated October 18th, 1897?—Yes.

15,067. (*Chairman to Witness.*) Do I understand you to go so far as this, that the scheme in your Report is the best temporary scheme that you know of?—Yes, it is the best for temporary purposes.

15,068. But, as I understand you, this scheme is practically only wanted for one company?—Yes.

15,069. And the needs of that one company can practically only be supplied by two, namely, the Chelsea and the Southwark and Vauxhall?—Yes, unless the other companies make larger works, and extend their works with a view of assisting in this interchange; they would then be able, of course, to assist, but it would necessitate the construction of other works. The Chelsea Company at the present moment have not got works to deal with this 8 or 10 million gallons. If that is to be brought into use, they will have to make filter beds, to lay mains, and to get pumping machinery.

15,070. (*Mr. De Bock Porter.*) They have only got the command of this water which is available?—They have the command of it, but they have not the means of bringing it.

(*Mr. Pope.*) They have not got the actual means of carrying it, he means.

15,071. (*Chairman.*) Does your scheme of inter-communication, contained in this Report, provide for the inter-communication of filtered water?—Yes.

15,072. Water available for immediate use, therefore?—Yes, available for immediate use.

15,073. (*Major-General Scott.*) Does the estimate of 307,000l., which you place on this document of the 18th October 1897, include the pumping engines, the filters, and the new mains which the Chelsea would have to lay, as you say, in order to be able to transfer the 10 millions gallons to another company?—Yes, it does. The estimate of the Chelsea and West Middlesex Company's engineers for the extension of works and for the conveyance of extra water from the intakes was 130,000l.

15,074. (*Mr. Pope.*) Is that for treating it before passing it on?—That was for filtration, pumping mains from Molesey, and reservoir accommodation.

15,075. (*Sir John Dorington.*) Making, in fact, 10 million gallons available?—Making another 10 million gallons available.

15,076. (*Major-General Scott.*) A main from Putney, was it not to the Campden Hill Reservoir?—It was suggested that the water should be passed from Molesey to Putney Heath, and then that from Putney Heath another main should be laid across the Thames, taking the water on to Campden Hill Reservoir of the Grand Junction.

15,077. (*Mr. Mallor.*) When you say a temporary scheme, do you mean that it is good for one, two, or three years, or do you mean that it would be good in case of a deficiency such as we have had this last autumn?—No, I do not think it would be sufficient for a case like the last autumn. It is sufficient for a temporary breakdown of machinery or mains, but I do not think it sufficient to give any company a permanent supply for six months.

15,078. (*Major-General Scott.*) But surely this outlay which you are describing at the present moment, or have just been describing in the case of the Chelsea Company, would be a permanent arrangement in the sense you mean of giving a supply for six months?—So long as the Chelsea Company do not require the water for its own district.

15,079. Quite so; but then that expenditure is based on the assumption that it would give them a large surplus, is it not?—It is, certainly.

15,080. (*Chairman.*) What is the use of a scheme of inter-communication that will not meet such a case as that of last autumn?—I think in case of duplication for a breakdown it is useful, but I think that a company must look after itself to a certain extent. No doubt the East London Company are going forward to make more works for their own purposes; and then this, as a stand-by in case of a sudden emergency, would be no doubt useful.

15,081. (*Mr. De Bock Porter.*) Do you think that this expenditure is desirable, merely as a sort of mutual insurance between the companies?—I beg your pardon?

15,082. Do you advocate this expenditure as being desirable for a mutual insurance between the companies?—I think it might be a sort of insurance ticket

for them. For my part, I do not think that it is necessary, leaving the East London out of the question.

15,083. (*Chairman.*) It is such a case as that of the East London that we have in our view; I understand you this would not avail to assist the East London in another breakdown like that of last autumn?—Am I to understand, then, that you want evidence as to how the East London are to be assisted next year.

(*Chairman.*) The East London or any company that like the East London breaks down and fails to supply; that is the idea at the root of all those who have advocated inter-communication.

15,084. (*Sir John Dorington.*) The East London was in such a position that it could only be helped by you, and if you lent it effectual assistance, as I understand, you were obliged to get assistance from the others to enable you to do it?—Yes.

15,085. That is to say, you had not got sufficient surplus of your own to supply the deficiency of the East London?—Not to supply the deficiency—certainly not. We gave them all we could spare; we gave them six millions gallons a day.

15,086. Then in order to replace that six million gallons a day to some extent, you went to the companies which lay alongside you and they helped you?—They are doing it now, but they did not at the time of the great drought. They were at their highest supply then, and practically had nothing to spare.

15,087. You were not receiving any assistance from the West Middlesex and the Grand Junction at the worst time?—Not until last month—not at the worst time. We did it all ourselves. The Southwark and Vauxhall rendered very satisfactory help to the East London.

15,088. Would it not be advantageous to the West Middlesex and the Grand Junction to have such connexions as would enable you to come in and help you to supply a weaker neighbour?—Yes. We have connexions now with the Grand Junction and the West Middlesex. Of course, they might be further extended. But in order to make them effectual, the Grand Junction and West Middlesex must provide more filter beds and more works and mains—in order to be able to give its water.

15,089. In fact, your position is this, that when the mains are all interchangeable some companies would have to increase their works so as to be able to put more water into their own mains to go on?—Yes.

15,090. And that might be a good thing if the thing was viewed as a whole?—Yes.

15,091. (*Mr. De Bock Porter.*) But not desirable in the interests of the particular company that had the surplus?—I think that you can carry this connexion too far sometimes, and do too much for an insurance.

15,092. It would make them less self-reliant?—It would have that effect. If they could rely upon their neighbours, they might not be too anxious to spend money on their own account; but I do not think any of them would look at it in that light.

15,093. (*Sir George Bruce.*) Will the East London be in a better position when they have got their increased storage reservoirs?—That is a question I would rather you put to the engineer of the East London Water Company, because I have not got the facts before me, and anything I tell you would be simply hearsay evidence.

(*Mr. Pember.*) That gives me an opportunity of saying we should propose to put Mr. Bryan in to tell you what will be the effect of the works that have been lately authorised, and which are now in progress—which is a very important feature in the case.

15,094. (*Chairman.*) Your evidence, so far, seems to me to bear a good deal upon the question of who ought to bear the cost of these connexions. It would seem that there are only two companies who can give extra help to their neighbours?—Besides ourselves; we have given six million gallons a day all this time of drought.

15,095. That makes three companies?—There are three—the Grand Junction, the West Middlesex, and ourselves.

15,096. Three donors and five recipients; it would seem, therefore, that the cost of the connexion should be borne by the five?—The Kent, of course, gave some; that is, four out of the companies. The West Middlesex and the Grand Junction by extending their filter beds

and works can give some, providing they have powers for drawing an extra quantity.

15,097. Therefore, what you told me just now, that there were only two companies that could give an extra supply and had any surplus to give away, is not quite accurate.

(*Mr. Pember.*) There are five.

(*Witness.*) Well, there are five, the West Middlesex and the Grand Junction could only do it by taking an extra quantity from the Thames, that is what I mean to imply. They could do it by taking an extra quantity and by making works for it.

15,098. (*Sir John Dorington.*) That is to say, if they became partners in the provision of water to the East London, they could supply it?—No, I do not think they could.

15,099. That is to say, at the present moment they do not require to take more water from the Thames, but they have got power to take more water from the Thames, and if they would like to take more water from the Thames, they could supply the wants of East London to some extent?—The Chelsea Company are in that position, but no other company.

15,100. (*Mr. Pember.*) The Southwark and Vauxhall?—The Southwark and Vauxhall have a large surplus, of course.

(*Mr. Pember.*) One requires to be a little careful when you come to these matters, you know.

15,101. (*Chairman.*) You have not included in this estimate the cost of drawing extra water from the Thames, or of storing it or of filtering it?—No, beyond what will be required by the Chelsea Company.

15,102. That is what will be required by the Chelsea Company to utilize its existing powers?—Yes.

15,103. I think we must consider this scheme on the basis of the existing powers, and not assume that any company gets extra powers of drawing water from the Thames. As I understand you, upon the existing powers the Chelsea and the Southwark and Vauxhall can both give a surplus to their neighbours?—Yes.

15,104. The New River and the Kent have also a surplus that they can give to their neighbours?—Yes.

15,105. You mentioned some fifth company?—The West Middlesex and the Grand Junction could do it, but they cannot do so without further filter beds and further powers of drawing water.

15,106. That is not included in this estimate?—No.

15,107. Do I understand you to say that this surplus that we have been speaking of, that would be available to assist other companies, can be used in time of drought?—Yes.

15,108. Such as we had last autumn?—Yes.

15,109. (*Mr. Mellor.*) That is to say, the eight million gallons a day that you refer to?—The eight million gallons a day.

15,110. But no more?—That is from the Chelsea Company.

15,111. Yes, from the Chelsea Company?—But there is also a surplus from the Southwark and Vauxhall Company.

15,112. In time of drought?—Well, they have had it all this year; I hope we shall never have a worse drought than we have had.

15,113. A surplus?—Yes, a surplus.

15,114. Can you estimate the surplus at all—how many million gallons a day?—They have a surplus of 10 million gallons, and means of dealing with it.

(*Major-General Scott.*) Which company is that?

(*Mr. Balfour Browne.*) The Southwark and Vauxhall.

15,115. (*Major-General Scott.*) But you mentioned that the Southwark and Vauxhall Company was altogether an exceptional case?—Yes. I believe it is an exceptional case that they happen to have the power of filtering and dealing with it.

15,116. (*Chairman.*) Very well; the cost of their making available such surplus as they now have by law is included in your 307,000l.?—The Chelsea Company.

15,117. And the Southwark and Vauxhall, as I understood?—No; they had not the powers then when this Report was drawn up.

15,118. Do you know at all what extra cost would be entailed in order to enable the Southwark and

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Vauxhall to dispose of its surplus?—The Southwark and Vauxhall would have to retain their works at Battersea instead of dismantling them in order to deal with them. I think it might help you if I were to describe a scheme which I have in my mind that might facilitate an interchange very much.

15,119. Well, what is it?—It is this—that the Southwark and Vauxhall Company, owing to exceptional circumstances, that is, the circumstance which I explained of having spare works at Battersea, which have been replaced by other works at Hampton—

15,120. (Sir John Dorington.) Are they bound to sell those works or to dismantle them by statute?—I believe not. They have at Battersea a filtering plant capable of treating 15 million gallons a day with pumping power sufficient for dealing with 25 million gallons a day. They have a main from Hampton to Battersea conveying unfiltered water to their Battersea works. Now, under the ordinary arrangements those works would be dismantled, but it appeared to the engineers in discussing this matter that as a temporary arrangement it might be possible to devise means for utilizing those extra works of the Southwark and Vauxhall, at least till such time as other arrangements were made. Supposing we had 10 million gallons a day available at the Battersea works, it makes a very good central position for distribution. Mains could be laid from that centre north, south, east, and west, to the assistance of all the companies. No. 1 main would be from Battersea to Campden Hill; that would be capable of delivering 10 million gallons from the Southwark and Vauxhall Company to the Campden Hill reservoir of the Grand Junction Company.

15,121. (Mr. Balfour Browne.) Ten million gallons, did you say?—10 million gallons per day, we suggest, the main could carry. No. 2 would be a junction between Campden Hill and the New River Head, which would be capable of passing six to seven million gallons a day. No. 3 would be a connexion from Battersea to the New River Head at the Angel, Islington.

15,122. (Mr. Pember.) How much would that take?—That would take 10 million gallons a day. Another main, No. 4, would be from the Southwark and Vauxhall at Battersea to the Lambeth Reservoirs at Brixton. No. 5 main would be from the Southwark and Vauxhall at Nunhead into the East London Company through the Tower Subway, and that would be capable of delivering 10 million gallons a day. Now, here you have a scheme which would enable all the companies to be coupled up, providing those Southwark and Vauxhall works could be utilized. Of course, it is a question of what arrangements could be made for it; but having filtration and pumping plant ready at hand for 10 million gallons a day, that would enable the companies not only to assist the East London, but to assist them all round.

15,123. (Mr. Mellor.) But only to the extent of 10 million gallons a day?—No, we could do more than that with that scheme and a few other little connexions as well. For the assistance of the East London Company, we could by utilizing those connexions, and supposing we were legalised to get the water to do it in case of emergency—

15,124. (Chairman.) Does this scheme suppose a power to draw extra water from the Thames?—It is supposed to legalise existing powers.

15,125. You may assume that the existing powers are legalised?—It is the same sort of thing with them, but there is the question of inter-sale.

(Mr. Pope.) In regard to the interchange, there is the question of relaxing the restriction on the existing powers.

(Chairman.) Of course.

(Witness.) Next season, if that plan were adopted, we could give from the New River Company at the Lea intake to the East London, supposing them to be the receiving company, six million gallons a day; we could give three million gallons a day from the Grand Junction Company, and three millions from the West Middlesex Company—taken through the New River and given at the Lea intake. That would be 12 millions.

15,126. (Major-General Scott.) Could you do that during the summer time—during the season of large draft?—We could with slight extensions of the works—slight extensions of mains, and in one case with a little extra filtering area. From the Southwark and

Vauxhall through what I may call No. 5 main, we could give ten million gallons a day to the East London. That would be that we could give them, in case of necessity, 22 million gallons a day.

15,127. (Mr. Mellor.) Where would you get it from?—From the New River. We have six to spare, and we have been giving them that all this year; I include that. Then by these extra connexions from Battersea centre to Nunhead, we could pass 10 million gallons a day from the Southwark and Vauxhall—

15,128. Then your scheme provides for water passing to as well as from?—To as well as from—that some system of interchange should be available for all the companies.

15,129. (Mr. De Bock Porter.) Are not the Southwark and Vauxhall abandoning these works which you refer to—are they not bound to give up their supply from the Thames there—they cannot take more water from the Thames, can they?—They already have the power of taking a larger quantity than any other company from the Thames, but they have not any power of selling it.

(Mr. Pember.) It is in the utilization of the works for the purpose of distribution where the value of the Battersea site comes in.

15,130. (Sir John Dorington.) You make the Battersea works a sort of central reserve station for all London?—A sort of central reserve station for all the different water companies, and it might be maintained until such time as other better arrangements were made.

(Chairman.) As I understand, this is a scheme of your own, and it has not the sanction of the other engineers who signed the scheme of October 1897.

(Mr. Pember.) Yes, it has.

(Witness.) I was going to say the other engineers who will follow me will back me up, one and all.

15,131. (Chairman.) We are not proposing to call them all if you all agree?—No, but any you do call will be quite at one with me on that scheme.

(Chairman.) It is a great pity you did not lay that scheme before us instead of this one.

(Mr. Pope.) I am afraid that is because of the delicacy of the position. It has not been officially sanctioned by a meeting of the engineers nor by a meeting of the chairmen of the respective companies. From what I was aware of it, I have been waiting for this disclosure with very great anxiety.

15,132. (Chairman.) Can you give us the cost of this second scheme—this alternative scheme?—Yes I can do that. I can say that this scheme provides for an interchange of water between all the companies, not only with the East London. It means assistance from the interchange of so many companies to the New River, assistance to the Grand Junction, assistance to the West Middlesex—in fact, all the companies by this scheme would be able to receive assistance, of course, not all at once. We do not suppose we are all going to break down at once, but in case of emergency they would have that.

(Mr. Balfour Browne.) His Lordship asked the cost.

(Witness.) I will tell you the cost, my Lord. The total cost of the scheme will be approximately 255,346*l.* for mains and connexions. Then, there would be the question of the Battersea works—whether they would have to be purchased or whether they could be rented, or how they could be obtained for the purposes of this inter-communication. That, of course, is a question that I cannot very well answer, but the works are there, and if they could be made available by some terms, it would be possible to utilize them.

15,133. (Chairman.) If I follow this scheme, it would be the means of rendering available for all the companies the existing surplus supply of the Southwark and Vauxhall, which is 20 millions gallons a day, as I understand?—Yes; 10 million gallons a day it can deal with now at these works.

15,134. Ten million gallons from them; six millions, possibly, from the New River?—Yes.

15,135. And what else?—Three million gallons per day from the West Middlesex, and three million gallons per day from the Grand Junction.

(Chairman.) That is 22 million gallons.

15,136. (Mr. Pember.) Then what about the Chelsea?—The Chelsea we have left out of this scheme for the present.

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15,137. (*Chairman.*) Is there no connexion with the Chelsea?—There is a connexion with the Chelsea.

15,138. But the Chelsea supplies nothing?—The Chelsea supplies nothing; it is simply a receiving company if it requires it.

15,139. (*Mr. Mellor.*) There is one question I think I should like to ask you. Can you give us any notion of what rent would be required for the Battersea works; I mean, supposing an annual rent were paid by all the companies, what rent would be required?—The only means I have of arriving at anything like a figure is that I believe the land is worth about 10,000*l.* an acre, and there are about 30 acres. That would be 300,000*l.* for the land. Then there is a main from Hampton to Battersea; that, I suppose, would be worth about 150,000*l.*

15,140. That is 450,000*l.*?—Say 450,000*l.* at the lowest.

15,141. Then what percentage would you put upon that, so as to arrive at something like a rentable value?—Supposing, for argument's sake, you took three per cent. upon the value.

15,142. Then, as Sir John Dorington reminded me just now, what about the fixed machinery?—The machinery would have to be kept up. As the Southwark and Vauxhall are going to dismantle that machinery, it would not matter to them so much whether they dismantled it now, or whether they dismantled three or four years hence. It would have to be kept up.

15,143. (*Sir John Dorington.*) You would have to pay a rental on the machinery, would you not?—It might be necessary to do so.

15,144. (*Mr. De Book Porter.*) At present those works. I suppose, figure as an asset in the Southwark and Vauxhall balance sheet, and they are looking to realise this as building land?—Yes.

15,145. So you would have to pay something like building land price for it, if you wished to retain it as a water area as it is at present?—I believe that land adjoining these works has already fetched 10,000*l.* an acre, and that is why I mentioned that sum.

15,146. (*Mr. Lewis.*) Would you require all that land?—We should require about 30 acres altogether for the filter beds and the works that they stand on.

15,147. (*Chairman.*) All those items, of course, are not included in your estimate of 255,000*l.* odd?—No, the estimate of 255,000*l.* is an actual outlay for mains, connexions, and works.

15,148. (*Mr. Mellor.*) What percentage would you put upon the machinery—roughly; of course, you have not made a valuation, I suppose, of the machinery in detail, have you?—No.

15,149. Then you can only tell us generally; but perhaps you can give us some notion?—Might I suggest that the engineer of the Southwark and Vauxhall might perhaps answer that question for you satisfactorily.

(*Mr. Balfour Browne.*) Cannot you give us a notion?

15,150. (*Mr. Mellor.*) It would save examining another witness?—I do not like giving notions, because it is so misleading.

15,151. (*Major-General Scott.*) You bring this forward as a temporary measure, do you not?—I think it is a measure that might be made. It would be so far permanent in this way: that the mains laid under this scheme would under any circumstances, if you did away with the Battersea works, be available to carry water from a central station. This outlay of 255,000*l.*, if made, would be a permanent thing in itself, even if the Battersea works were done away with.

15,152. You do not contemplate that the filter beds at Battersea should remain permanently in use, do you?—No, I should not think so, but why we suggest this Battersea scheme is, that it is a scheme that is immediately available.

15,153. Quite so—to meet the present emergencies?—To meet present emergencies, and the money laid out to meet those present emergencies for mains and works would not be thrown away in the future if Battersea was abandoned.

15,154. (*Mr. Mellor.*) That is so; you think the value of the land would recoup the possessors—the companies?—No.

15,155. (*Mr. De Book Porter.*) Does the 255,000*l.* which you mentioned just now include the value of all

the areas or only the engineering works that are necessary?—The engineering works that are necessary to make Battersea a distributing centre.

15,156. Quite apart from any question of the money to be paid to the Southwark and Vauxhall?—Quite apart from that. That is a matter for consideration.

15,157. (*Chairman.*) I do not quite understand why those works are to be temporary only. If inter-communication between the different companies is desirable, the works of inter-communication would remain permanent?—The works of inter-communication would, but in case the Battersea works, after five years, were dismantled, this 255,000*l.* would not be lost—it would still be available.

15,158. (*Mr. Mellor.*) As I understand you, supposing the companies were purchased by any authority, these works would probably be kept by the purchasing authority for the purpose of inter-communication between different parts of their system?—They might do so; there is no reason why they should not.

15,159. Would they be useful for that purpose?—Very useful for that purpose—to keep them up as a reserve. There should be a central reserve to take you all round London.

(*Mr. Pope.*) Battersea might be a central station for the distributing works, but these would be available, wherever the distributing centre might be. That is what I understand.

15,160. (*Chairman.*) Hardly so. How can mains from Battersea help distribution from some other centres?—In this way: supposing Battersea with its filtration plant and pumping plant was dispensed with, it would naturally be necessary to bring water from some other part of London to Battersea, other works would have to be constructed hereafter, and Battersea would simply be a distributing centre. You might run a main, say, from Battersea to Hampton, and you might have your filtering plant at Hampton, and you might pump the filtered water direct into the Battersea centre and so distribute it again amongst the various companies. The water has to be brought to London from somewhere. The present water coming from Hampton to Battersea is unfiltered, but if at any time the companies hereafter wished to do away with Battersea and constructed other works, say, on the Thames at Hampton, a small portion of land at Battersea for a covered reservoir would be quite sufficient, and that would make that a distributing centre.

15,161. It is almost a pity, I think, that we have this scheme of 1897 upon the notes at all. Have you got the scheme that you have just developed—namely, the Battersea scheme, as I may call it—in a shape that can be put upon the notes?—I am afraid I should not like to do that without more definite instructions. I have shadowed forward to you a scheme which is practicable, but I cannot bring it forward as a scheme that has received the approval of the companies in any way.

15,162. Not only practicable, but in your judgment better than the scheme that we have upon the notes?—Decidedly better.

15,163. Then we should be very glad to learn through some channel whether the other engineers agree with you. Now just one word about the distribution of the cost of that scheme. Supposing that scheme were acted upon, how do you think it would be fair to distribute the cost between the eight Metropolitan Companies, have you considered that?—It has hardly come within my province as to how the distribution of cost should be made. I produce a scheme and I say it will cost so much, I have nothing to do with the distribution of the cost.

15,164. Yes, but we have, unfortunately?—I am afraid I cannot help you in that.

15,165. Very good. It would seem that the companies that find the surplus water ought not in fairness to contribute as much, if at all, to the cost?—Of course, if they sell the water, they would be paid for the water they sell.

15,166. Yes, but there are only certain companies that will find the surplus water to be distributed under your scheme?—Yes.

15,167. They at present have got more than they want for themselves, but they do not want any scheme of inter-communication?—No they do not.

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15,168. Then may they not fairly say, why are we to pay any part of the cost of a system of inter-communication which we do not want, which is to benefit others?—That is naturally what we feel; that it is rather hard that the companies who do not require this interchange should be saddled with a proportion of the expense for companies who do require it.

15,169. The only company that requires it, as I understood from your evidence, is the East London?—At present

15,170. But there are others who might require it, do you think?—No, I do not think so. I do not think that they will want it. I think that with the East London it is only a temporary affair; I think that they will get over their difficulties and that they probably will not want it.

15,171. (*Mr. Balfour Browne.*) Even the East London?—Yes, the East London.

15,172. They will not want it?—I say eventually.

(*Mr. Pember.*) Of course, the position of the East London Company to-day is not what it will be in a couple of years' time, and as these works are permanent it would be rather hard that all the expense of them should be put upon the East London because their position is what it is to-day, whereas two years hence it might be the best of all the companies.

(*Chairman.*) The result is that nobody wants these works and nobody should bear the cost of them.

(*Mr. Pember.*) Have you got the memorandum on the proposed Bill before you, because, if so, you will see paragraph 7 rather provides for this.

(*Mr. Pope.*) Yes, certainly it does. The companies have agreed upon a scheme of bearing the cost *inter se*.

(*Mr. Pember.*) "Subject to reasonable contribution by any company taking and utilizing by means of the proposed works and powers water which it would not otherwise have been enabled to take and utilize the interest on debenture stock applied by the respective companies for the foregoing works to be borne by the eight companies in proportion to their respective water rentals." That is agreed between the eight companies, as I understand. Then, perhaps I ought to read No. 8: "Any company taking water from another company to pay for such water to the company supplying it at a rate to be agreed upon or fixed by arbitration."

(*Chairman.*) I confess I do not quite understand that paragraph 7 which you have just read: "Subject to reasonable contribution by any company taking and utilizing by means of the proposed works and powers water which it would not otherwise have been enabled to take and utilize the interest on debenture stock applied by the respective companies for the foregoing works to be borne by the eight companies in proportion to their respective water rentals." What is meant by a "reasonable contribution"?

(*Mr. Pember.*) The contribution involved in Section 8, which I have just read, and that which perhaps I ought to have read which is contained in Section 9.

(*Chairman.*) But Section 8 has nothing to do with works; it deals with paying for water supplied.

(*Mr. Pember.*) I ought to have read 9 as well: "A standing arbitrator to be appointed by the eight companies, or failing such appointment, by the Local Government Board, and in case the respective companies do not agree amongst themselves, such arbitrator at the end of each year to decide as to the contribution of any company taking and utilizing the water rendered available by the proposed works, and also to decide any matters in difference between the companies."

(*Mr. Balfour Browne.*) That is only payment for water.

(*Mr. Pember.*) In fact it rather meets the point that I suggested just now; the arbitrator under that clause 9 would be able to deal with the fact that the condition of each particular company might vary from year to year and he would make its contribution to the interest on debenture stock, raised for the purpose of these works, differ according to the position in which he found it.

(*Mr. Pope.*) Year by year.

(*Mr. Pember.*) Year by year. It would be an elastic arrangement; for instance, it might be right—of course, I am only to be taken as putting this hypothetic-

ally—it might be taken that at this moment such a company as the East London would have to find a very large portion of the interest on the debenture stock, but in two years' time the position of the East London might be so radically altered that that arrangement would be manifestly unfair, and the arbitrator under Section 9 would, therefore, make an arrangement accordingly.

(*Chairman.*) But there must have been, in the first instance, an issue of the debenture stock by the several companies.

(*Mr. Pember.*) Yes.

(*Chairman.*) In what proportions I cannot gather from these resolutions.

(*Mr. Pember.*) That may be, but that is for making the works. It is unimportant in what proportion the companies might each find the debenture stock—probably that would be found by them all in common. The important thing is what share of the interest on that debenture stock each company should bear.

(*Chairman.*) I understand it a little better now.

(*Mr. Pember.*) And that would be determined from time to time according to the position at the moment in which the arbitrator found the respective companies.

(*Mr. Balfour Browne.*) Only in relation to utilising the water rendered available.

(*Mr. Pember.*) Quite so; I mean now, for instance, that if one company wanted nine-tenths of the water in the year 1900, it is quite fair that it ought to pay nine-tenths of the interest on the debenture stock.

(*Mr. Balfour Browne.*) If nobody wanted any, there is a difficulty in seeing how it would fall.

(*Mr. Pope.*) Then I should take it the arbitrator would make them all pay equally.

(*Mr. Pember.*) Stop a minute; no. If none of them want any, then paragraph 7 comes in. There would be no company liable to make a special contribution, and, therefore, the interest on the debenture stock would be borne by the eight companies in proportion to their size—to their respective water rentals. If there is no special reason for the contrary, that is the way the interest would be found. The way the capital is found is unimportant. If there is no special reason to the contrary, they would bear the burden of the interest in that proportion; if there were a special interest, clause 9 provides for the arbitrator dealing with it. As I say, you might imagine that one company—I forbear to continue to say the East London, because, it is rather hard on the East London to be held up as a pariah—but any company which used nine-tenths of the water that year, the arbitrator would make them pay nine-tenths of the interest. I do not say that that would be exactly right, but something of that kind would be done. The next year it might not be wanted at all, and if nobody wanted any, then clause 7 comes in; but if somebody else wanted eight-tenths out of the nine-tenths the first company had taken, that company would take eight-tenths of the burden. It seems to me to be automatic and perfectly simple.

15,173. (*Chairman to Witness.*) To complete what you have to say about this, can you tell us what time it would take to carry out your Scheme No. 2, to lay the mains so as to make it workable?—If work begin at once, I see no difficulty why the scheme could not be in working order by next June.

(*Chairman.*) Then it would require eight months.

15,174. (*Major-General Scott.*) Would that include all those trunk mains you have mentioned?—Those trunk mains.

15,175. Across the river?—Yes, we can get over the railway bridge there.

15,176. (*Chairman.*) You see your scheme requires an Act of Parliament, so it would be eight months from the passing of the Act of Parliament that authorised the scheme?—Yes.

15,177. I am afraid that would carry you over the next dry season?—Yes, the Act of Parliament would.

15,178. You cannot do it without an Act of Parliament, surely. It would require an Act of Parliament in the first place to enable you to raise the debenture capital?—Yes.

15,179. In the next place, to enable you to sell water to one another, you must have an Act of Parliament?—Yes.

15,180. (*Major-General Scott.*) Do you know whether the Southwark and Vauxhall scheme—not yours, but the scheme of the company in the future—involves the abandonment of that main carrying unfiltered water to Battersea?—Yes it does.

15,181. It involves the abandonment of it?—The abandonment of it as a delivery main, they will use it ultimately in their works.

15,182. They would use it in their works?—Yes.

15,183. Therefore, they in their scheme will depend upon the continued use for their own purposes of that main?—Yes, they do.

15,184. Then how would that stand if you at the same time, under your scheme, utilize that main for this purpose you are speaking of?—Because they could do it. If it were not for that point we could deal with 15 million gallons per day at Battersea; but the Battersea works would have to be kept up until another main was laid in the place of that. The Southwark and Vauxhall would require to utilize 5 million gallons a day for themselves from Battersea until other arrangements were made, that is, the laying of a main from Battersea to Hampton.

15,185. Then you would for your scheme take over their 36-inch main or whatever it is?—Yes.

15,186. And they would have to lay another main as a substitute for it for their own purposes?—Eventually, yes. Of course, I do not pretend that that could be done in six months.

15,187. It could not be done in six months?—No, the main which is already there would be available until any other main could be laid.

15,188. (*Mr. Mellor.*) I suppose we may take it that the Southwark and Vauxhall have assisted the East London without parliamentary powers?—Clearly, yes.

15,188a. (*Chairman.*) But that assistance has been much short of what you propose they should be able to give?—Yes.

(*Chairman.*) How have they been able to do that—because there are Acts of Parliament forbidding them to sell their water?

(*Mr. Pope.*) They have disregarded their Act of Parliament, that is all. Necessity compelled them to disregard it. Generally, I think it is implied that the power to take water is limited only to purposes of their own district inferentially; but in the case of the Southwark and Vauxhall, of course, it was by absolute statutory enactment that they were forbidden to supply, and, of course, that Act had to be disregarded.

(*Mr. Pember.*) It may be, you know, that they supplied water from wells really, and then have used their own supply from the Thames for their own purposes.

15,189. (*Sir Henry Knight.*) I am sorry to interrupt, but I do not as chairman of the Southwark and Vauxhall subscribe to the statement that in assisting the East London we have done anything illegal or out of our powers.

(*Mr. Balfour Browne.*) The legal gentlemen on the other side seem to think you have.

(*Chairman to Sir Henry Knight.*) I find you have got a clause in your Act of 1898 providing that: "The water to be taken by the Company under this Act shall be used by the Company for the supply of their district only and shall not be supplied to any other of the Metropolitan Water Companies or to any other company, body, or person outside their district."

(*Sir Henry Knight.*) Yes, my Lord, that is exactly so, but we have other sources of supply besides the Thames.

(*Mr. Pember.*) That is what I was suggesting.

(*Mr. Balfour Browne.*) If your Lordship will look to the preamble of the Act you will see: "And whereas the company are now taking, and by reason of the growth of the population, and of the increased demand for supplies of water within their limits, require to take for the purpose of fulfilling their statutory obligations with respect to the supply of water within their limits, water from the River Thames in excess of 24,500,000."—they were given it expressly to supply their own district.

(*Mr. Pope.*) If they can ear-mark the water; it only applies to water taken from the Thames.

(*Sir Henry Knight.*) That is all.

(*Mr. Pope.*) They might supply as much as they like of the water they get from their Streatham wells; that is all they say.

(*Mr. Mellor.*) Yes, but I should think that no one would find fault with them under the circumstances.

(*Chairman.*) The Thames Conservancy Act is rather inconsistent with these local Acts. I understand the Thames Conservancy Act provides: "It shall be lawful for any one of the Metropolitan Water Companies to supply any part of the total quantity of water which such company are empowered to take from the Thames or from any tributary thereof, and which is not required for the purposes of the district of supply of such company to any other or others."

(*Mr. Pember.*) That is section 295 of the Thames Conservancy Act, 1894.

(*Chairman.*) That Act applies to the Southwark and Vauxhall.

(*Mr. Pember.*) Certainly.

(*Mr. Pope.*) That Act might do, but so far as the water drawn under the 1898 Act is concerned, that Act would entirely over-ride it.

(*Mr. Pember.*) Yes the 1898 Act would. It does not apply to that water, but it applies to all other supplies of water.

(*Chairman.*) To all their other Thames supplies.

(*Mr. Pember.*) Yes, antecedent.

(*Chairman.*) That is what Sir Henry Knight means, I suppose.

(*Mr. Pope.*) Yes, I think that is what it is.

(*Mr. Balfour Browne.*) I do not think we agree to its being applicable to Thames supplies. This does not give any company a power to allocate its powers of drawing water from the Thames to any other company.

(*Chairman.*) It says so in terms.

(*Mr. Balfour Browne.*) I think not, my Lord.

(*Chairman.*) It says anything that they do not require for the purpose of supply for their own district of supply may be supplied to any other company.

(*Mr. Pember.*) It does not allow the other company to take water direct from the Thames, but it does from the companies that have already taken it.

(*Chairman.*) Yes.

(*Mr. Pember.*) And that is what we have done. I do not see that there has been any breach of the statute.

(*Mr. Pope.*) Not if you can ear-mark each particular gallon of water that has been so used.

15,190. (*Chairman.*) I do not think I need ask you anything more, Mr. Collins, but I shall be very glad to know if the engineers of the other companies concur in your Scheme No. 2?—Yes, they do.

(*Chairman.*) You say they do, but learned counsel say they do not.

(*Mr. Pember.*) I have not said so, I say they do.

(*Witness.*) They all concur in this scheme.

(*Mr. Pember.*) It is the chairmen of the companies that as yet have not been able to consider it. I am asked to say that they have not had time.

(*Chairman.*) Perhaps you will let us know a little later on; and perhaps you will get authority to put that Scheme No. 2 on the notes.

(*Witness.*) Yes, my Lord, I might point out that the advantage of this Scheme No. 2 is, that it enables the works of all the companies to be joined up without in any way interfering with the ordinary distribution in their district.

15,191. (*Chairman.*) Does Scheme No. 1 interfere with the ordinary distribution in the districts?—It does to a small extent, but this one not at all.

Cross-examined by Mr. BALFOUR BROWNE.

15,192. Going back to the first scheme, would you tell me what led to this meeting of the engineers in October 1897?—Why the chairmen—

15,193. I see the Report is dated October 1897?—Yes.

15,194. Something must have led up to that, because I see it is addressed to the Chairmen of the Metropolitan Water Companies?—The meeting was held because the chairmen ordered it. We did not ask them their reasons for ordering it.

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15,195. Do you remember when it was ordered?—It would be about August or September in that year, I think.

15,196. Was there any scarcity at that time either existing or threatened?—No, I do not think there was.

15,197. Do you know why this matter came up at that particular date—

(Mr. Pope.) I do not think you heard Mr. Collins explain that the object of the engineers in that was, not with reference to drought or scarcity, but with reference to breakdowns of machinery.

15,198. (Mr. Balfour Browne.) I heard that, and I am coming to that immediately. (To the Witness.) You do not know what led to it—it was merely an order from the chairmen of the companies?—Yes, that was it.

(Mr. Pember.) Of course, Mr. Browne, we all knew that this was one of the matters which was referred to the Commission.

(Mr. Pope.) You will hear Mr. Hollams, who represents the Committee of Chairmen. He is their legal adviser, and he will tell you how it came about.

15,199. (Mr. Balfour Browne to Witness.) Something has been said about the Southwark and Vauxhall Company being able to draw from wells and supply even if they could not take from the Thames; are you aware that the total amount that they draw from the wells is $1\frac{1}{2}$ millions only?—No, I am not aware of that. Their own engineer can answer that question.

15,200. Now, I understand that, leaving out the East London, which I will do for the purpose of my question, there is no necessity for carrying out the works contemplated, either in the first or in the second scheme?—That is a matter of opinion.

15,201. I ask your opinion?—My opinion is that it is superfluous.

15,202. You think it is superfluous?—In my private opinion, yes.

15,203. And, therefore, this is superfluous that has been put in to-day, in which the companies have pledged themselves to go for a Bill in Parliament to carry out works which in their view are absolutely superfluous?—No, I do not say that; I only say it is my opinion that it is superfluous.

15,204. You told his Lordship that your company never would require a supply of water—that you had everything in triplicate, and that if there was a breakdown you could go on supplying?—Yes.

15,205. And you have sufficient water for supplying—have you?—Yes, certainly.

15,206. Therefore, you would not be dependent upon this interchange scheme at all?—If we required it, we should take it, but I do not think we want it.

15,207. Why should you, therefore, come into the scheme and bear any portion of the cost if you will never require it?—That is a matter for my directors to decide, not for me.

15,208. But you do not see the justice of it, that you should be brought into a scheme that will do no good to you, do you?—Personally, I do not.

(Mr. Pope.) What have the County Council to do with the New River being exhausted?

(Mr. Balfour Browne.) I beg your pardon, I did not hear what you said, but probably it is unimportant I should.

(Mr. Pope.) I daresay, but if you heard it you would not attend to it, I have no doubt. I said I should like to see what the County Council have got to do with the New River being exhausted.

(Mr. Balfour Browne.) May I say, I think the County Council have a good deal to say to this Bill when it is introduced.

(Mr. Pope.) That may be, but wait until it is before the Committee.

15,209. (Mr. Balfour Browne.) Forgive me, this is the first we have heard of it, and I think we are bound to put our point. (To the Witness.) As I understand, the 307,867*l.* would—again leaving out the East London—be money thrown away?—No, I do not think it would be money thrown away.

(Chairman.) Are we to take it that in the view of the County Council there should be no inter-communication?

(Mr. Balfour Browne.) No, my Lord. I think if the County Council—I do not know why gentlemen laugh, but I will answer the question, my Lord. I think that the inter-communication may be essential if Parliament is to continue the works in the hands of eight companies; if, on the other hand, Parliament passes over the whole of the eight companies' works into one hand, no such questions of difficulty will arise at all. That is our view.

(Chairman.) Inter-communication will be wanted all the same.

(Mr. Balfour Browne.) There will be no question then, my Lord, of who is to bear the cost of inter-communication.

(Mr. Pope.) No, that is quite a different matter; the poor ratepayer would have to do it.

(Mr. Balfour Browne.) He has to do it now, or the water consumer, which is the same thing.

(Mr. Pope.) That is a different thing.

15,210. (Mr. Balfour Browne to Witness.) Again, with regard to your second scheme, you have not got a total as to the cost that would be incurred in carrying that out. You have told the Commission that the works would be 255,000*l.*, the land, probably, 300,000*l.*, that is what I took your estimate to be; but you had no calculation as to the machinery necessary—am I right?—Yes. The works are there. There is the filtration plant, and there are the engines. We cannot say what sort of a bargain might be arrived at between one company and another as regards the utilization of those works.

15,211. You told his Lordship that the contemplation of the Southwark and Vauxhall Company was to abandon those works; is that because those works at Battersea have been condemned?—No, I do not think they have been condemned.

15,212. Would you mind telling me why they were to be abandoned if they were good works?—Because, I suppose, they thought that they would be better somewhere else.

15,213. As a fact, the Act of Parliament that the Southwark and Vauxhall got in 1894 does contemplate the abandonment of these works, and the sale of the land after the works have been abandoned?—Yes.

15,214. Is it a fact that it was thought necessary to abandon them because the situation of the works was unsatisfactory for a water supply?—There might have been some sentimental idea about it, but I do not think that that applies in the case of using them as works of a temporary nature.

15,215. I have not got it here, but I daresay you know that the Local Government Board reported that that site was an unsatisfactory one; do you know that?—I do not know it as a fact. I will take your word for it.

15,216. Of course, there was some reason for the proposed abandonment of that capital?—Quite so; you can take that.

15,217. Under your scheme, which you have put before the Commission to-day, there would be 22 million gallons available for any company that might require it. As a fact, how much has the East London received this autumn—six millions from you, ten, I think, from the Southwark and Vauxhall, and eight or nine from the West Middlesex and Grand Junction and yourselves—

(Mr. Pember.) No.

15,218. (Mr. Balfour Browne to Witness.) Is that so?—I cannot follow you.

15,219. I was trying to follow you, because you told me first that the New River have supplied 6 millions?—Yes; I said that.

15,220. Then in conjunction with the West Middlesex and the Grand Junction, you had supplied between eight and nine millions—

(Mr. Pember.) Including the six, he said.

(Witness.) Yes, including the six. Those three companies are, at the present moment, giving eight million gallons to the East London.

(Mr. Balfour Browne.) Wait a moment; half a million from the Kent and, I understand, also six millions from the Southwark and Vauxhall—

(Mr. Pope.) That is $14\frac{1}{2}$ millions.

(*Chairman.*) Ten millions from the Southwark and Vauxhall.

15,221. (*Mr. Balfour Browne.*) I think not, my Lord—only six millions supplied, though they could have supplied more. (*To the Witness.*) That is 14½ million gallons, is that right?—That is right.

15,222. And that has been supplied during this autumn. First of all, I think, you were the only company that supplied?—I believe we were the first to give the supply.

15,223. Would you mind telling me when you began to give the supply?—I really could not say exactly the date, it was towards the end of July, I fancy.

15,224. (*Major-General Scott.*) The 29th July, I think it was?—Yes.

15,225. (*Mr. Balfour Browne.*) Then do you remember when your supply was supplemented by the West Middlesex or the Grand Junction?—That was about a month ago.

15,226. Only a month ago?—Only a month ago.

15,227. When did the Southwark and Vauxhall supply begin—on the 18th September, I am told, and the Kent, I am told, on the 26th August, is that right—perhaps you do not know?—Well, I will take your word.

15,228. Are you quite sure that the Kent approve of this scheme that you have been suggesting?—I do not say that any of the directors of the companies have approved the scheme; I said distinctly that they had not.

15,229. Might this involve a draft of water from Kent wells being supplied in districts where it is not now supplied?—I do not quite follow you.

15,230. Might this scheme involve the supply of water from wells in Kent to districts which are not at present supplied with Kent water?—No, in this No. 2 Scheme we propose to take hardly anything from the Kent at all. They would be more of a receiving company than a giving company.

15,231. Has the Kent ever been short of water?—Not to my knowledge.

15,232. (*Chairman.*) Does not the scheme enable you to give water to the Kent?—Yes; but only to take a small quantity from Kent.

15,233. (*Mr. Balfour Browne.*) But it does allow you to take some water from Kent?—In case of necessity.

15,234. Suppose a case of necessity—what could you take from the Kent Company?—I suppose, at the outside, a million gallons a day.

15,235. A million gallons a day under your scheme?—Yes, but that would be the outside.

15,236. And that might be carried away and supplied in a district where the Kent Company is not at present supplying?—It might be—the same with all the water companies.

(*Mr. Pope.*) It would apply to the whole of them, of course.

15,237. (*Mr. Balfour Browne.*) Is it not a fact that the total amount that all the five companies can draw from the Thames is 150,500,000 gallons a day? Do you know the amount that they can all take?—It is given in General Scott's return, I do not remember it at the moment, but I can look for it.

15,238. Is it not the fact that they are taking only 135,175,000 gallons a day?—Are you talking of an average?

15,239. In September?—September is not the time of their greatest supply.

15,240. It is not the time of the greatest supply, but it is the time when the drought happened?—In September.

15,241. Was it not? Was not there a shortness in East London at that time?—That might be, but I say it is not the time of our highest supply.

15,242. Very likely not. You began to eke out their supply in July. If that is so, in September there was still available from the Thames within all the companies' statutory powers 15 million gallons a day. Would not that have met the requirements of East London? You tell me that you have only supplied 14½ million gallons; therefore if there were 15 million gallons it would have met all the wants of East London?—That would only make a difference of half

a million gallons—it is the difference between 14½ and 15.

15,243. If there were 15 millions available, that 15 millions, if it could have been got, would have been sufficient for the whole supply that was actually given and wanted?—I think that they were receiving 14½ million gallons. There is only half a million difference between the two figures.

15,244. Of course, this scheme, if it were carried out, would involve, as you told the Commission, a new Act of Parliament; would it involve, in your view, the right to take more water from the Thames?—It would not involve that right, but I think it would be a very advisable thing for the companies to have powers to draw a little extra quantity from the Thames in cases of emergency, subject to the approval of the Local Government Board—but only in cases of emergency.

15,245. But a right to take water in an emergency beyond the limit at present existing would be of necessity, I understand, part of your scheme?—The companies intend, I believe, according to that document that has been put in, to ask for those powers.

(*Chairman.*) It is part of Scheme No. 2.

15,246. (*Mr. Balfour Browne.*) It is not quite part of Scheme No. 2, because he has not mentioned it, but I think it is involved in it. (*To the Witness.*) You could not get water sufficient for the interchange under Scheme No. 2 which would enable you to have 22 millions gallons a day for distribution without statutory powers to take more water from the Thames, could you?—If the prohibition of sale or the limitation of sale was done away with, I think we might have enough.

15,247. (*Chairman.*) I get the 22 millions this way—six millions from the New River, ten millions from the Southwark and Vauxhall, and six from two other companies?—The Grand Junction and the West Middlesex.

(*Chairman.*) That amounts to 22.

(*Mr. Pope.*) Without any further statutory powers to get water at all.

(*Mr. Pember.*) To add the power of inter-sale would allow that.

(*Mr. Balfour Browne.*) As a fact it is not so, Mr. Pember. One of the companies, as I think your Lordship mentioned, was the West Middlesex.

(*Chairman.*) I mentioned the West Middlesex and the Grand Junction.

(*Mr. Balfour Browne.*) Take the West Middlesex. Is it not the fact that the West Middlesex at the present time can draw 24½ million gallons, and was pumping 23½ million gallons of it in September; therefore, it could not get more than one million under this present concession, and yet you are depending upon a much larger figure in the 22.

(*Mr. Pember.*) You forget the Staines Reservoir, Mr. Browne.

15,248. (*Mr. Balfour Browne.*) If you please, I am not speaking of Staines; I am speaking of what exists to-day. (*To the Witness.*) Is that not so? What are you relying upon from the West Middlesex in the scheme—what proportion of the 22 millions?—Three millions I put down to them.

15,249. If they are at present pumping 23½, and their powers are 24½, they have only got one million to spare, and, therefore, they would have to have statutory powers for two millions more?—They might want a little more water.

(*Mr. Pope.*) They have got statutory powers for two more, Mr. Browne, in the Staines Reservoir.

15,250. (*Mr. Balfour Browne.*) Again, what are you relying upon the Grand Junction giving?—Three millions.

15,251. Is it not the fact that the Grand Junction powers are 24½, and that they are working 22?—Yes, but they can arrange that.

(*Mr. Pope.*) What do you mean by their powers, because the Staines Reservoir must be included in their powers?

(*Mr. Balfour Browne.*) Their powers are to draw 24½ million gallons from the Thames.

(*Mr. Pope.*) Including the Staines Reservoir power.

(*Mr. Balfour Browne.*) For their district.

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(Mr. Pope.) The Staines Reservoirs are not only powers; they are actually in the process of being exercised.

(Witness.) You are forgetting that the Chelsea Company are drawing eight millions less than they could, and, therefore, it can be arranged with them, I should think. In No. 2 Scheme we are taking nothing at all from the Chelsea Company, who have eight million gallons to spare.

15,252. (Mr. Balfour Browne.) What is the Chelsea Company's power—22—and what are they using?—Yes, it is 22, and they are using 12 or 13, I believe, in their highest supply.

15,253. With regard to the Staines Reservoir, which my learned friends were putting upon me just now, this scheme of yours is intended for temporary requirements, and the Staines Scheme will not be ready for a considerable number of years?—Precisely. This is a scheme that can be brought into use immediately.

15,254. Giving these companies statutory powers to draw more water from the Thames?—No, I do not say that.

Cross-examined by LORD ROBERT CECIL.

15,255. You have said that the New River has a surplus of six million gallons?—I said we have been giving six million gallons to the East London.

15,256. Did that come from wells, or from the Lea?—Partly from wells, and partly from the Lea.

15,257. How much surplus was left in the Lea at the time of this drought?—That I could not answer; I could not say.

15,258. Was there any? Did you not, in fact, exert all your powers of taking water from the Lea?—We may have taken what we were entitled to take.

15,259. I am not accusing you of any misdemeanour; I only want to know the facts.—We did not take more.

15,260. Did you exhaust all your powers of taking water from the Lea?—Yes, I suppose we did.

15,261. Very well, you did; then the six millions surplus would have had to have come from the wells, would it not, and did come from the wells?—Part of our supply came from the Lea, and part from the wells.

15,262. If you wish to increase your supply beyond what you take from the Lea, it is obvious that it must come from the wells?—Yes.

(Chairman.) Yes, but the total which there was, the surplus of six millions, was partly from the Lea and partly from wells.

(Lord Robert Cecil.) That is so, my Lord, but my point is that the whole of the Lea is exhausted, and, therefore, any surplus that the New River takes —

(Chairman.) The whole of the legitimate Lea is exhausted.

(Lord Robert Cecil.) I think, when the Commission comes to enquire into it, they will find that, substantially, what I said was accurate.

(Chairman, to Witness.) As I understand, your power is to take the whole Lea, when enough has been left for navigation.

(Lord Robert Cecil.) No, it is not.

(Witness.) We take 22½ million gallons in the 24 ours.

(Chairman.) The two companies together are entitled to take all the water in the Lea, after a certain quantity is left for navigation.

(Witness.) I believe so, but we have the first call.

15,263. (Mr. Mellor, to Witness.) Was there sufficient left for the navigation this last year?—The navigation was kept up, I believe, during the whole time of the drought.

15,263a. (Lord Robert Cecil.) If you will allow me, I might just follow that question of the learned Commissioner up. How was the water provided for the navigation; was it not provided by pumping it back?—That I could not answer; that I do not know.

15,264. Does either of the companies keep any gaugings of the Lea?—Yes, certainly, gaugings are kept.

15,265. Have you a copy of those gaugings?—No, I have not.

(Mr. Pember.) I see in the Local Government Report for this year, this paragraph:—"The New River Company limit the quantity taken by them to 22,500,000 gallons by means of a self-acting gauge."

(Lord Robert Cecil.) That is not the point I was on, but I am much obliged for the information.

(Mr. Pope.) You want the gross gaugings of the Lea.

15,266. (Lord Robert Cecil.) The gross gaugings of the Lea is what I wanted to know. (To Witness.) I venture to ask you whether you have any objection to producing, for the information of the County of Hertfordshire, the gaugings of the Lea?—If you will ask Mr. Bryan, of the East London Company, he can answer those things far better than I can.

15,267. They are taken by the East London Company, are they?—I do not say they are taken by them, but he can answer that question, and I cannot.

15,268. Why can he answer it better than you?—Because I have not got anything to do with the Lea personally.

15,269. You have not got anything to do with the Lea?—No.

15,270. Why not—you take water from the Lea?—We take water from the Lea.

(Mr. Pember.) This gentleman is only the distributing engineer.

15,271. (Lord Robert Cecil to Witness.) You appear for the company. Do you mean to say the New River Company have nothing to do with the Lea?—No; I say personally I have not. Others can answer this question far better than I can.

15,272. As far as you are concerned, you see no objection to producing the gaugings of the Lea?—Certainly not.

(Lord Robert Cecil.) Then, my Lord, I should ask your Lordship to direct the production of those gaugings, which are exceedingly important from the point of view of the County of Hertfordshire, to know what amount of water is left in the Lea, and what amount, therefore, there is. Whether it is true, in fact, as we allege, that the pumping from the wells acts on the Lea and on the Chadwell springs also.

(Chairman.) Would you tell me what head of our inquiry that is relevant to?

(Lord Robert Cecil.) To begin with, to see whether it is right that this inter-communication should be established, because, if it be true, as this gentleman has said, that the only way that they can increase their supply is by pumping more from the wells, it may be a question whether it is right that the whole of that water should be distributed over London, and a very much larger consuming area given to the water, which must eventually operate on the Lea, and, therefore, reduce all the water which is otherwise available for those two companies. It may be a perfect fallacy to say that you can really get more water from these two sources than you get at present, because what you are taking out of the wells really comes out of the Lea, so that it is really a fallacy to suppose that you have got this surplus for distribution over the whole of London. I submit that it is of very great importance to the inquiry.

(Chairman.) I confess, Lord Robert, I cannot see where we have got to inquire into the mutual reaction of the wells and the Lea upon each other.

(Lord Robert Cecil.) I should submit in this way, my Lord: it is suggested that the New River Company has a surplus of six million gallons which they can make available for the rest of London by certain works.

(Chairman.) That is not so.

(Mr. Pope.) Nobody has said that.

(Lord Robert Cecil.) A surplus of six millions he did say; and he said that is the basis of his inter-communication scheme for the future, that he will always have that six million gallons.

(Mr. Pope.) No.

(Lord Robert Cecil.) Yes, certainly, that the six millions will be available, otherwise it is no use executing these works.

(Chairman.) The opinion of the witness is that these inter-communication works are not very useful in any point of view.

(Lord Robert Cecil.) That is so.

(*Chairman.*) The striking off of the six millions would only make them a little less useful.

(*Lord Robert Cecil.*) Yes, but then you see it makes a material difference in the value of this scheme, and, of course, it makes a very material difference to Hertfordshire if this scheme is to be sanctioned, because they will infallibly pump from the wells, and not only drain the Lea, but drain the other streams as well.

(*Chairman.*) They have got a right, too, to pump from the wells now.

(*Lord Robert Cecil.*) Yes, but if they have a very much larger consuming area, they will pump more. Substantially there is the limit now given to us that they cannot pump more than is enough to supply their existing district; if you extend substantially the district of the New River over the whole of London, you will make a very much greater drain on Hertfordshire.

(*Mr. Mellor.*) Your point is the danger of exhausting the wells, I suppose.

(*Lord Robert Cecil.*) Yes, the danger of exhausting the wells and the streams.

(*Mr. Mellor.*) Do you make any point with regard to the condition of the Lea—I do not quite understand?

(*Lord Robert Cecil.*) Certainly, we do; but, of course, the lower reaches do not effect us so much. One of our points is that the whole of the streams of Hertfordshire, not only the wells, but the whole of the streams, are being exhausted.

The witness withdrew.

Mr. JAMES WILLIAM RESTLER, called and examined.

15,277. (*Chairman.*) You are the engineer of the Southwark and Vauxhall Company?—Yes.

15,278. I do not know whether you have considered Scheme No. 2, as we have called it, referred to by Mr. Collins?—Yes, I have.

15,279. Do you concur that that is a better and more practicable scheme than Scheme No. 1?—Yes, I think it is infinitely better. I do not know whether it has been made clear that the two schemes were conceived with totally different objects. The original scheme, that of October, 1897, was mainly with the object of providing a supply in the event of a temporary breakdown, of either the machinery or mains, of any particular company, and not specially in reference to a deficiency in the sources of supply. After the experience of this year, when the subject was referred by the associated chairmen back to the engineers, we then thought it was necessary, to deal with a possible recurrence of circumstances such as those of this year; and with that object I think I suggested the use of the Battersea station as a permanent stand-by for the help, not only of any of the east and southern companies, but also for all. If you look at the cartoon, you will see that, geographically, the Battersea works are almost in the centre of a circle from which the others radiate, and so, fortunately, it lends itself very well to the proposal that has been submitted.

15,280. Have the Southwark and Vauxhall Company power to retain their Battersea works if they think fit?—Yes.

15,281. They are not allowed to pump any water from the Thames except in case of extreme emergency, I think, at Battersea, are they?—They are not allowed to take water at any time from the Thames there.

15,282. Not even in exceptional circumstances?—No, under no circumstances below the tideway.

(*Chairman.*) Then my memory has misled me.

(*Mr. Pember.*) That is at Seething Wells.

15,283. (*Chairman.*) Then they have no power to pump at all; but they are substituting, as I understand it, in the management of their own concern a filtering plant at Hampton for the existing filtering plant at Battersea?—Yes, the old works at Battersea were commenced in 1835, to take water from the Thames at that point, and up to 1852 that was the practice. In 1852, when the Metropolis Water Act was passed and the intakes were all removed up the river above the tidal influence, a main was laid from Hampton, the new point of intake, to bring unfiltered water to the existing works at Battersea. That has remained so ever since, and that has been the practice, to bring water from Hampton, and filter it at Battersea, up to the extent of 15,000,000 gallons a day. As the district grew, other works were constructed at Hampton, but they were quite complete

(*Chairman.*) We have had Sir John Evans's view about that, and I do not think we have anything to do with it.

(*Witness.*) I might say that this Scheme No. 2 provides for giving assistance to the New River Company, therefore, assisting Hertfordshire as well.

(*Mr. Balfour Browne.*) He said they would never require assistance, as they were always to be the assister.

15,273. (*Chairman to Witness.*) Can you tell me whether you have pumped any water from the Thames—from Barking Creek, I think it is called—into the upper reaches of the Lea during this drought?—Do you ask me that question?

15,274. I do?—The New River Company have not done anything of the sort.

15,275. Have the East London?—That I could not answer.

15,276. Do you mean to say that you, as engineer of the New River Company, do not know what has been going on this last summer?—I know, but it is only hearsay evidence, I do not like to give that. I like to speak of things I really know myself as much as I can.

(*Mr. Balfour Browne.*) He is a stickler for not giving hearsay evidence.

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Recalled,
Q. 16,700.

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in themselves—the filtering and the pumping was done at Hampton and the water pumped direct for distribution to the London district.

15,284. So that for your own purposes you would not want to retain the filtering plant at Battersea?—No. We are now, and have been for the last five or six years, constructing substituted filters, reservoirs, and engines at Hampton, with a view of concentrating the whole of the works for enabling the supply to be afforded from Hampton.

15,285. Of course, I presume, the filtering area at Hampton is much less costly than the filtering area at Battersea?—Yes, that is so.

15,286. And for your own purposes you would sell the filtering area at Battersea and dismantle your works there?—Yes; the object is to dismantle the works and sell the land. Of course, the value of the land now is far in excess of what it originally was.

15,287. What do you estimate the remuneration to the Southwark and Vauxhall Company ought to be if they are to keep up their Battersea plant and works for the purposes of this Scheme No. 2?—Of course, I am at a disadvantage in mentioning any figures, because it has not been really considered by my board at all. This arose in consultation with the other engineers a week ago, and there has been no opportunity to properly submit it. But the basis on which we dealt with it was this—assuming that 30 acres of land were required, and the value is taken at the average price, about 10,000*l.* per acre, which that land is realising—assuming that the company would make no charge for the works, but that the associated companies should guarantee the interest, say, at 3 per cent. on the value of the 30 acres of land, and that would be about the price at which the money would have to be raised, supposing the capital were applied for in the ordinary way, and that the interest on that 300,000*l.* at 3 per cent. should be guaranteed by the associated companies.

15,288. (*Mr. Mellor.*) And that would include the use of the machinery, would it?—That would include the use of the whole of the plant.

15,289. (*Chairman.*) I do not quite see why you would want all that area at Battersea: if you filter all the water, you are able to pump at Hampton, and send it filtered to Battersea, why should you want to keep the Battersea filters?—That is not so. The 15 million gallons, which is the quantity we propose to set aside as the emergency supply, would have to be filtered at Battersea, on the 11½ acres.

15,290. You reckon 15 million gallons as the emergency supply: that is what you are empowered to pump in excess of what you want yourselves?—Of course, there is a clause in our Bill of last year, which would prevent us giving the whole of those 15 millions,

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15,291. You may assume, for this purpose, that those legal difficulties would be swept away. In fact, you have 15 million gallons to spare, have you not, of your existing authorised take from the Thames?—Yes, we have, as regards quantity. If that 15 millions were wanted for any considerable time, we should have, as Major-General Scott remarked this morning, to duplicate the 36-inch main which at present brings unfiltered water from Hampton to Battersea. We should have to lay another main in addition, so that the existing 36-inch main might be left for the unfiltered supply to Battersea, whilst we could get a substituted portion of that 15 million gallons by the suggested new main for the supply of our own district.

15,292. (Mr. De Bock Porter.) With your powers at the present time to take water from the Thames, have you that 15 million gallons absolutely for your disposal for outside use?—Well, I should hardly like to say so at the present moment; but we shall within a month or two. The engines which would render it secure are practically completed now.

15,293. (Major-General Scott.) You said that that is intended to be an emergency supply. What emergency do you think it would serve?—Well, of course, it would be a supply that would be available not only for emergencies, but might be continued indefinitely. As long as we could take the water from the Thames, those works would deal with 15 million gallons a day, day in and day out, from year to year.

15,294. What emergencies would you forecast in your own mind?—Such, for instance, as a possible failure in any well, or system of wells, in Kent; or such as a failure of the Lea again.

15,295. A failure in the system of wells?—Of the Kent, for instance, supposing they wanted help—it is remote, I admit—but supposing they did, it would be available in that case. It would be available in the case of a failure in the Lea; but, of course, it would not provide against any failure in the Thames, because its source of supply is the Thames.

15,296. You would not intend that supply to absolve the East London Company from finding a way out of their difficulties for themselves, would you?—No, not at all. What would be done in a case of that sort would be this: in the domestic arrangements which the companies, or the federated companies, would probably make before those works could be used, I should imagine they would fix such a price on the company requiring a supply as would practically amount to a penalty, and make it bad policy from a financial point of view for it to rely upon such a station as this; and that it should be retained simply to tide over unforeseen contingencies, or such things as you could not possibly prevent.

15,297. (Chairman.) Do you include among unforeseen contingencies such a drought as we had this autumn?—Yes.

15,298. (Major-General Scott.) Of course, the drought having occurred, it would be the business of the water company or the water companies who have suffered by it to provide for such a contingency in the future?—Certainly. I do not for a moment suggest that supposing these works were in existence for this purpose at the present time, the East London should sit down and say, "Well now we shall not have this drought again probably for a century, and, therefore, we can rely upon these works to meet it when it does arise."

15,299. (Mr. De Bock Porter.) How soon will you cease to use the Battersea works?—Well, in the ordinary course of events we should have discontinued them in about two years or rather less; but, of course, there is a considerable quantity—I daresay fully 10 million gallons a day—available now from that station, even with their partial retention for the Southwark and Vauxhall Company's supply.

15,300. (Mr. Mellor.) I thought you said that the reservoirs cover 11½ acres?—The filters cover 11½ acres.

15,301. What does the rest of the land—30 acres altogether—cover?—There are reservoirs that hold 46 millions of unfiltered water and then there are engine and boiler houses, and stores, and other things besides.

15,302. So that the whole 30 acres are occupied by the works of the company?—Yes, practically 30 acres—it might be an acre or two less—I think it is about that.

15,303. (Chairman.) Then you say that the Southwark and Vauxhall would be content with 3 per cent. upon the price of 10,000*l.* an acre for that land?—Well, I must not state that, because, as I say, it has not been submitted to my board; but that is the basis we have taken in our estimate.

15,304. That is adding 9,000*l.* a year to the estimate of 255,000*l.* odd in Scheme No. 2?—Yes, that would be so.

15,305. Now, you take that 9,000*l.* a year at what—30 years' purchase?

(Mr. De Bock Porter.) 33 years' purchase.

(Witness.) We have not dealt with it on the basis of the purchase of the works.

15,306. (Chairman.) No, but I want to see what capital sum ought to be added to the 255,000*l.* odd in order to estimate the cost of Scheme No. 2.

(Mr. De Bock Porter.) Roughly, 300,000*l.*

(Witness.) Yes that would be it.

15,307. (Chairman.) So that is 500,000*l.* odd against the 307,000*l.* of Scheme No. 1?—There would be more than that, because you see you would have to take into account the works at Hampton, and also, in that case, the connecting main—the 36-inch main between.

15,308. (Mr. Mellor.) The extra main?—The extra main.

15,309. And excess works at Hampton, do you say?—No. There are intake works at Hampton now which, of course, would be required if Battersea were retained.

15,310. (Chairman.) Have you taken power at Hampton to pump the whole of your statutory right?—Yes, we have pumping power at Hampton now for 50 or 60 million gallons; but in connexion with Battersea there is a special station which pumps the unfiltered water at Hampton up a standpipe, and from there it falls to Battersea through this 36-inch main; so that before Battersea could be used by itself, you would want to retain the 36-inch main, and the pumping station at Hampton—the intake station. So that that 300,000*l.* would probably grow to very nearly half a million.

15,311. (Mr. De Bock Porter.) And does the 255,000*l.* that was mentioned include the capital value of the standing charges for keeping the thing as a going concern?—No, that is simply the first cost of the connexions.

15,312. (Chairman.) Then Scheme No. 2 is considerably more expensive than Scheme No. 1?—If you capitalise all those, yes.

15,313. Well, you must?—Yes, dealt with in that way.

15,314. (Sir John Dorington.) You have got your main from Hampton to Battersea now which you intended to utilize for your other works, and you will have to lay another main to take the place of that main which you intended to use for your other works?—Yes, that is exactly so.

15,315. It was 100,000*l.*, I understand?—Yes, about that. It is 10 miles long, and it would be about 10,000*l.* a mile.

15,316. In round figures, 100,000*l.*?—Yes.

15,317. (Major-General Scott.) In the first scheme, as I understand it, the estimate did not include all the works that would be necessary for such companies as the West Middlesex, the Grand Junction, and so on, to enable them to increase their surplus, or to have a proper surplus to supply?—No, it did not; and, of course, in comparing these two estimates it is comparing a set of works set aside for that particular purpose, and for that only, with another in which there were only filters and mains, just sufficient for the extra supply that any particular company promised to the joint scheme.

15,318. So that the estimates, as they stand, are not comparable?—No, they are not. They ought to be re-submitted if they are to be dealt with on the basis of comparison.

15,319. (Sir John Dorington.) When the water is at Campden Hill, how does it get into any other service? What company does Campden Hill belong to?—The Grand Junction and West Middlesex both have reservoirs at Campden Hill.

15,320. To join up with the Chelsea, you would want some special arrangement?—With the Southwark and Vauxhall; we cross their mains in the Upper Richmond Road. In fact, I may say that arrangements are being made now for connecting them immediately; the mains cross one another at right angles. As a matter of fact, nearly all the companies have connexions between their own systems now.

15,321. (Chairman.) To pass to another subject, do you know what the gaugings of the Thames were during the last drought?—I only know them from the Thames Conservancy returns. I have not taken them.

15,322. You have not taken them yourself; you have not got them, have you, so that we could have them before us?—No, I have not got them here.

15,323. (Mr. De Bock Porter.) Would it materially affect the financial arrangements of the Southwark and Vauxhall if those works, instead of being dismantled, were used in the way suggested?—No, I do not think it would, because in the Act of 1894 authorising the construction of the alternative works, there was a clause inserted that the capital authorised should be reduced by the amount realised by the sale of Battersea; so that in the event of Battersea not being sold, the whole of the capital authorised by that Act would be called up with no set off against it.

15,324. (Chairman.) I may as well use you as a connecting link or main to get in these figures. Does that table give the Thames Conservancy gaugings?—Yes, those are the gaugings.

The following tables compiled from information received from the engineers of the Thames Conservancy and the East London Company, and showing the average monthly discharge of the River Thames at Teddington Weir and the River Lea at Fielde's Weir, from January to September 1898, inclusive, were put in:—

THAMES.

Month.	Average Daily Discharge at Teddington Weir.	Total Average Daily Abstraction at Sunbury, Molesey, and Hampton by the Water Companies.	Assumed Natural Discharge at Teddington Weir.	Proportionate Natural Daily Discharge, the Average for 10 Years 1888-92 being represented by 100.	Proportionate Average Natural Discharge of 1898 withdrawn for the Metropolitan Supply.
	Million Gallons.	Million Gallons.	Million Gallons.	Per Cent.	Per Cent.
January	1,545.5	102.8	1,648.3	75.9	6.2
February	858.1	105.3	963.4	40.0	10.9
March	678.9	105.1	784.0	45.3	13.4
April	409.3	110.7	519.9	40.7	21.3
May	843.1	112.7	955.8	94.1	11.8
June	429.0	120.6	549.6	74.0	21.9
July	186.2	130.3	316.5	51.1	41.1
August	142.4	128.7	271.1	50.8	47.4
September	77.0	135.2	212.2	42.0	63.7

LEA.

Month.	Average Daily Discharge at Fielde's Weir.	Average Daily Abstraction by New River Company.	Assumed Natural Discharge at Fielde's Weir.	Proportionate Natural Daily Discharge the Average for nine Years, 1884-92 being represented by 100.	Proportion of Average Natural discharge of 1898 withdrawn for Metropolitan Supply.
	Million Gallons.	Million Gallons.	Million Gallons.	Per Cent.	Per Cent.
January	48.1	22.4	70.5	40.1	81
February	26.4	22.4	48.8	30.5	106
March	31.9	22.4	54.3	37.0	95
April	19.3	22.4	41.7	38.4	127
May	23.5	22.4	45.9	37.3	114
June	19.6	22.4	42.0	48.8	121
July	13.9	21.6	35.5	44.6	139
August	12.2	16.8	29.0	41.4	132
September	8.2	16.4	24.6	41.1	114

The percentage abstraction shown in the last column is in part derived from the store of water in the East London Reservoirs.

15,325. (Chairman.) I see that the actual average daily flow at Teddington Weir fell as low as 77 million gallons in September, 142.4 million gallons in August, and 186.2 million gallons in July?—Yes.

(Mr. Mellor.) We have not got the figures for October yet.

(Chairman.) No.

15,326. On the other hand, the natural discharge at Teddington Weir was always above 200 million gallons, even in September?—Yes, I should think that is so.

(Sir George Bruce.) That was before the water companies took their supply.

(Chairman.) Yes.

(Major-General Scott.) The natural flow includes the companies' supply.

15,327. (Chairman.) Quite so, it includes the companies' supply, and the companies took a larger supply in September than they did in August, or July, or June, or any other month of the year?—Yes, September was specially trying, and at that time, of course, we were affording a small additional supply to the East London. We, the Southwark and Vauxhall, were drawing beyond our own requirements at that time.

15,328. (Sir John Dorington.) In fact London was too hard upon the Thames at that time?—It was, of of course, a very trying time.

(Sir George Bruce.) The weather was too hard upon London.

15,329. (Chairman.) I suppose you could not tell us what supply would have been sufficient for the companies, if the Staines Reservoir Scheme had been fully completed?—The supply from the Thames?

15,330. Yes. You cannot tell us what the companies would have drawn from the Thames during that month of September, if the Staines Reservoir Scheme had been fully completed and in operation?—I am afraid I could not off-hand, but it would have reduced it probably by 20 millions.

15,331. (Sir John Dorington.) Was not the Staines to supply 35 millions per day?—Yes. It would have been about that with the present supply of the companies—supposing the requirements of the companies were not greater than at present.

15,332. The reservoirs would have supplied 35 million gallons a day?—Yes.

15,333. That would have increased the 77 million gallons spoken of there by 35 millions.

(Chairman.) It would still have left the actual flow over the Teddington Weir a little over 100 millions.

(Sir John Dorington.) Yes, a little over 100 million gallons, but not 200 million gallons.

(Witness.) I do not think it would have done that, because the Staines Reservoirs would only be for the increased 35 millions. You see the 24½ millions which the companies are authorised to take under their existing Acts would, of course, have remained unaffected by the construction of the reservoirs. It would only have been the quantity in excess of the 24½ that they were drawing from the reservoirs.

15,334. (Chairman.) What I mean to say is: Supposing the Staines Reservoir Scheme had been complete and in operation, you still would have had the actual flow of the Thames at Teddington Weir much below 200 million gallons?—Yes, I think it would have been.

15,335. (Major-General Scott.) Of course, that is assuming that no restrictions are placed on the companies in future with regard to taking the first 130 million gallons a day that they are allowed to take?—Yes; supposing that limit had been imposed, then, of course, the supply over Teddington Weir would practically have been 200 million gallons or more.

(Mr. Pember.) I do not quite see how the Staines Reservoir can affect the Thames, because they are not allowed to take any water into those reservoirs unless there is 200 million gallons going over the Weir.

(Mr. Balfour Browne.) But then they can take it down below; the power of intake, of course, is not limited, so that each company can go up to 24½ millions.

(Mr. Pember.) That is another thing, but the Staines Reservoir cannot increase the diminution of the Thames.

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Mr. J. W. Restler. (Mr. Pope.) The restriction only applies to water taken from the Staines Reservoir, not to the original takes of the Thames companies.

7 Nov. '98 (Mr. Pember.) You cannot take any into the Staines Reservoir unless there is 200 million gallons going over.

(Sir John Dorington.) The capacity of the supply from the reservoirs would by that amount have diminished what was necessary to be taken from the Thames on that day.

(Mr. Pember.) The Staines Reservoir would not.

(Sir John Dorington.) The Staines Reservoir would be taking nothing, but they would be supplying 35 million gallons a day.

(Mr. Pember.) Yes.

(Sir John Dorington.) To that extent the present intake from the Thames by the companies would have been diminished.

(Mr. Pember.) I will not say that, but, at all events, it would have been supplemented without any further loss to the Thames. That is perhaps the truer way to put it—supplemented without any further loss to the Thames.

(Sir John Dorington.) It would have reduced the necessary intake of the Thames by 35 millions a day.

(Mr. Pember.) That is if they want the whole of the 35 besides.

(Mr. Pope.) To the extent of 35 millions taken from the Staines Reservoirs they would supply from storage, and not from the Thames.

(Sir John Dorington.) I am assuming that from the 1st of September they wanted so many hundred million gallons a day; the reservoir supplying 35 million gallons a day would have diminished the necessity for taking that amount out of the Thames.

15,336. (Major-General Scott.) What connexions could you suggest which would have practically immediate operation or operation next summer which would supply to the East London Company any of its requirements, assuming that a drought occurred again similar to the one this year?—I think the existing connexions would almost provide for a drought such as occurred this year, now that they are in use. If the East London Company commenced taking the supply from them immediately they had to fall back upon the reservoirs, because, of course, they have got a very large storage, and if that storage was kept up to the very moment that it began to be drawn upon, then, although they might be drawing daily a little in excess of the quantity they were receiving, it would still extend the life of those reservoirs very considerably, almost sufficient, I think, to carry them through.

15,337. Then what are you assuming they could receive now or next summer?—I am assuming they could receive six millions from the New River, three to five millions from the West Middlesex and Grand Junction, and six millions from the Southwark and Vauxhall Company.

15,338. You can guarantee that they will receive that from you next year, if necessary?—I think there is no doubt of that, because not only were we able to give that supply this year on the top of the most trying season we have ever experienced, but next year we shall have pumping power for at least 27 million gallons a day more and filtering power for 14 millions more in use.

15,339. Then do you consider that, assuming the present surplus supply which you are giving goes on, the company would be safe next year, assuming a drought occurred again?—To the extent of the 12 million gallons a day, yes, I think there is no doubt. That is, of course, assuming our legal disabilities were removed. But I think if there was any reasonable probability of that it would be better to lay a special main such as is provided in this No. 2 Scheme from Nunhead to the Tower Subway, so that they might have an unrestricted connexion between our reservoirs and their mains, quite outside the draft of our own district. At present the supply goes through a 20-inch main, which affords high pressure supply to a large district on the south. Well, it would be far better to have an independent main for that, and it might be of larger capacity, so that six millions then, I think, might very reasonably be increased to 10 millions, as far as the Southwark Company is concerned.

15,340. In case of emergency—fire and so on—that 20-inch main now in use might be drawn upon, and that would diminish the supply to the East London Company?—Yes, it might; for that particular district that is our principal fire main, and the one we look to for all emergency supplies.

Cross-examined by Mr. BALFOUR BROWNE.

15,341. I understood you to say, in answer to General Scott just now, that the existing connexions would be sufficient to meet such a drought as we have had this year?—I should not like to go so far as that, but I think it would go a long way towards mitigating the difficulties.

15,342. If they had been put into operation in July?—Yes, if we had had them at the very beginning of the drought, of course it would have deferred for a very considerable time the exhaustion of the reservoirs.

15,343. The scheme which was put forward by Mr. Collins you approve of, do you not?—Which one do you mean?

15,344. The second one?—Yes.

15,345. That scheme depends upon the utilization of Battersea, does it not?—It does.

15,346. Do you remember what was said about Battersea in 1894 by your company?—I remember generally; I think I gave evidence myself.

15,347. The Chairman of the company gave this evidence, but I daresay you did give the same. Sir Henry Knight on the 27th of April, page 8, is asked this at Question 42:—"Will you give the reason why you think it desirable to cease the filtration works at Battersea? (A.) Because the surroundings have become of such a nature that we do not think it is the proper place for filtration to be carried on now. They are surrounded by trades of various characters, and buildings, railway lines, and various other conditions which scientific men tell us (and we thoroughly endorse it) render such a position for filter beds not desirable. In addition to that in 1884, when I was before Parliament, there was a great noise about a dust yard situated adjoining these filter beds, and we then, at considerable expense, bought that dust yard, and got rid of it, and I then made a sort of promise, and I think Parliament understood it as such, that as early as I could, I would take steps to remove all the works from Battersea to a more favourable place. We are now trying to do so, and asking for power to carry out that promise." Do you remember that?—Yes.

15,348. And, further on he was asked, at Question 111: "Do you mean to discontinue the works at Battersea?" and he said, "Yes." Now I suppose those conditions still exist, barring the dust heap?—Yes, there is no doubt. Of course, it has become populous in the immediate neighbourhood; but I do not think that affects the principle at all, because I was referring to Battersea geographically, rather than to its surroundings. Supposing it were thought desirable at any time to remove these filters, it does not in any shape or form affect the scheme, because the 36-inch main would come to that point, and the distribution would take place from the site of Battersea and the substituted filters could be constructed no doubt for the money that the land would realise.

15,349. I understand you to say that you have water available, or that would be available, in the case of a scarcity, to the extent of 15 million gallons?—Yes, in the event of that clause being repealed.

15,350. Did not you come to Parliament only last year and say that you required all that water for the purposes of your own company?—Eventually—yes.

15,351. Eventually?—Yes.

15,352. Therefore, it is only a temporary matter that you could part with this water. It will be required in your own district?—After a series of years, no doubt, it will, if the district grows as it is doing at present.

15,353. I see you put in upon various occasions estimates as to what would be required at particular dates, and I see that at the time to which the late Royal Commission looked forward, namely, the year 1931, you calculated your district would require 33,362,000 gallons a day?—Yes, speaking from memory I suppose it would be somewhere thereabouts.

15,354. Now I understand you to say that, after all, this scheme that was proposed would only be for

temporary purposes, and that you should propose that each company, like the East London, should put its own house in order and be able to supply its own district. That is the right principle, is it not?—I think that has been the principle in the past.

15,355. But, unfortunately, some of them have not succeeded in doing it?—So far as their works are concerned they have done it. It has only been that a drought such as one could not have foreseen has occurred.

15,356. I understand this scheme that you propose is the very foreseeing of such a drought?—No, it is to prevent the inconvenience that might arise from such a drought—not for the prevention of such a drought.

15,357. Do you think it will ever occur again?—I should not like to say.

15,358. It ought to be guarded against in case it does?—I think it will be guarded against.

15,359. (*Major-General Scott.*) I do not quite like to leave your answer to the question I put to you in the state it is at present. I think I asked you whether you

could suggest any arrangements of junctions or connexions which would safeguard the East London Company next year, assuming that a similar drought occurred to that which has happened this year. I understood you did suggest it; but from your reply to Mr. Balfour Browne, it appears that you do not think you can take the responsibility of saying that those connexions would suffice?—You mean the existing connexions?

15,360. The existing connexions?—The existing connexions would be perfectly safe for at least six millions a day—for the interchange of at least six millions—that is, as regards Southwark and Vauxhall and the East London Company.

15,361. But I am taking the whole of the supplies that have been given to the East London Company into account. Are these sufficient to guarantee the East London Company from scarcity next year, assuming that such a drought occurs?—I would very much rather Mr. Bryan gave that evidence himself, because I do not really know what their domestic requirements are exactly.

Mr. J. W. Restler.
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Recalled,
Q. 25,280.

The witness withdrew.

Mr. WILLIAM BOOTH BRYAN called and examined.

15,362. (*Major-General Scott.*) You are the engineer of the East London Company?—Yes.

15,363. And you have had a good deal to do during this present season with connexions which have been made for the purpose of giving assistance to your company?—Yes, I have.

15,364. Will you tell the Commission what connexions you rely upon to ensure your supply next year, assuming a scarcity to occur similar to the one which has happened this year?—Well, I am not quite prepared to go into that to-day. I received a letter this morning from the Secretary to the Royal Commission asking for a statement upon the subject. I will read the letter. It is addressed to the Secretary of the East London Company. "Sir, I am desired by the Chairman and members of this Commission to inform the East London Waterworks Company that they will be glad to receive, as soon as possible, a statement with reference to the measures of inter-communication which they consider necessary in order to render a constant supply of water in the Company's district absolutely secure in the immediate future, notwithstanding the recurrence of a drought similar in effect to that of the present year." I only got that letter this morning, so that I am not sufficiently prepared to lay all those particulars before you just at the moment. But I can tell you everything that has been done during the past drought.

15,365. Do you concur in the Scheme No. 2, which has been brought before the Commission this morning?—Yes.

15,366. But we understood from the witness who spoke about it, I think, that the connexions of that scheme would be made by next summer?—Yes; provided there are no legal difficulties in the way. There are a great many miles of pipe connexions; but I concur with Mr. Collins in thinking that, if a good deal of vigour were displayed and the works commenced immediately, they might be finished by the end of the summer.

15,367. (*Chairman.*) But it is impossible that an Act of Parliament can be passed and then eight months given for the works by the end of the summer?—It would be quite impossible, my Lord, to do it by that time if we have to wait for an Act of Parliament.

(*Chairman.*) But I am afraid you must.

15,368. (*Major-General Scott.*) Do you see your way to carrying out connexions which will secure your company next year?—I would like to explain the connexions we have now. We have a connexion with the Southwark and Vauxhall Company which, as Mr. Restler has just stated, could allow six millions a day to go through. We have a connexion with the Kent; but the amount we get from the Kent is only 200,000 gallons a day, due to the small pipes through which the water must pass. The New River Company have been letting the East London Company have about six million gallons a day during the past summer. At the present moment we are receiving five million gallons a day from the Southwark and

Vauxhall; 200,000 gallons from the Kent Company and eight millions a day from the New River with the aid of the Grand Junction and the West Middlesex. Three millions of that are provided by the New River Company and five millions by the other two companies; so that at the present moment we are receiving about 13,200,000 gallons a day from other companies.

15,369. But, under ordinary circumstances, could not the New River Company supplement that supply by three million more gallons?—That would, of course, depend in a great measure upon the state of the Lea and their pumping machinery. They have been affording us much more than that three millions during the past summer—since the 26th July.

15,370. Then I may take it that you are not in a position now to give any positive statement with regard to the connexions on which you would rely next year?—I hope, in obedience to the request from the Secretary of the Royal Commission, to get the information out and lay it before you; but, as I said before, I only got the letter this morning, and I have not had time to prepare it.

(*Major-General Scott.*) Then I need not ask you any more questions under those circumstances.

15,371. (*Chairman.*) Have you any objection to tell us what you pay for the water you get from those different companies?—The terms have not been quite settled for the interchange between the Grand Junction, the West Middlesex, and the New River and us. It has been settled with the Southwark and Vauxhall.

15,372. How much is it?—15*d.* per million gallons, 3*d.* per 1,000 gallons.

15,373. You say that is for the Southwark and Vauxhall?—Yes.

15,374. What do you pay to Kent?—As to the Kent, it is rather a special supply, so we are paying for that small quantity 6*d.* per 1,000.

15,375. And can you give us the limits between which the discussion ranges as to the other companies?—With the New River Company we have our own arrangement for the water taken from them at 4*d.* per 1,000. But the amount is not yet settled as to what shall be paid for the water delivered to the New River by the Grand Junction and the West Middlesex. If they charge 4*d.* per 1,000, the New River will charge us 4*d.*; if they charge a little less, the New River will charge us a little less.

15,376. Perhaps you will kindly obtain for us the information that has been asked for?—Yes, it shall be prepared.

Cross-examined by Mr. BALFOUR BROWNE.

15,377. I only want to ask you one question. We heard in an earlier part of this inquiry that the district of the New River overlaps the district of the East London Water Company, and that the population in that overlapping district was 237,000 persons?—I know our boundaries do overlap.

Mr. W. B. Bryan.

Mr. W.B. Bryan. 15,378. To what extent you do not know?—The extent of population I do not know. I know ours enormously overlaps their district.

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15,379. Supposing you abandoned that district and it was supplied by the New River Company instead of by yourselves, the New River Company could then supply the six million gallons direct, and it would save you from the necessity of purchasing six millions from them, and it would save the consumer paying your higher price, because your prices are higher than the New River's, are they not?—Theoretically, yes; practically, no—decidedly no, practically.

15,380. Practically, they are, but theoretically, you mean, the prices are not higher?—Theoretically, yes, but practically, the prices are not. I will explain that.

15,381. (*Chairman.*) What is the theoretical price?—Our average rate per house is about 1*l.* 2*s.*; the New River rate per house is more than double that.

15,382. Is it 1*l.* 2*s.* per cent.?—No, my Lord, 1*l.* 2*s.* per house per annum is our revenue, and the New River Company's revenue per house is more than double that, I believe.

15,383. (*Sir John Dorington.*) You have got so many more houses at a low rateable value, I suppose?—Ours is quite a poorer class, and as the revenue depends upon the assessment, naturally our revenue per house is very much lower than that of any other company. For instance, we supply 50,000 or 60,000 houses for less than 3*d.* per week—less than 13*s.* a year.

15,384. (*Mr. Balfour Browne.*) As a fact, however, what you mean is that the scale of the New River Company, as allowed by their Act of Parliament, upon the same houses is lower than yours?—I believe it is.

15,385. Tell me with regard to this payment which is made—take, for instance, the Southwark and Vauxhall, 15*l.* per million gallons; that is for water to which, of course, they have no right, as we heard from my learned friends—which they were giving illegally.

(*Mr. Pym.*) No.

(*Mr. Balfour Browne.*) I thought Mr. Pope admitted it, though Sir Henry Knight denied it.

(*Mr. Pope.*) You mean the Southwark and Vauxhall.

(*Mr. Balfour Browne.*) Yes, I thought it was so.

Recalled
Q. 15,86

Mr. J. Hollams.

Mr. JOHN HOLLAMS called and examined.

15,386. (*Chairman.*) What companies do you represent?—I represent the New River, the Chelsea, and the Kent; but I act generally for the associated companies when they act together, where their interests are united.

15,387. May we take you for the purposes of to-day as representing all the eight companies?—I think probably so for the purposes of to-day; but five of the companies have their own advisers.

15,388. I mean for the purposes of this one question?—I think so, my Lord.

15,389. I observe that by these resolutions of the companies they have not yet determined what inter-communication works are desirable and to be recommended?—I think, my Lord, the view of the companies was that, inasmuch as legislation will be necessary, it is impossible to foreshadow in the future any definite scheme of inter-communication. It must vary from time to time as the population increases, as the consumption of water increases, and as circumstances change. Therefore, the companies could not ask the Commission to adopt in detail any definite scheme of inter-communication, and they think that it would be better that that should be regulated from time to time under the control of the Local Government Board to meet the requirements of the future. Of course, everyone has had in mind what has recently happened. No one doubts—at least, I believe none of the companies doubt—that that is a mere temporary evil, and is not likely to recur, and consequently one has got, not only to provide for that, but to provide for the possibility of disaster of the same kind by unusual drought or accident in the future, and to do that must depend on what works may in the future be deemed expedient. They cannot be by an iron rod established now for all time. Therefore, this scheme was suggested—that the companies shall submit to the Local Government Board from time to time such works as for the time being may be deemed expedient, and shall carry out those works under the control of the Local Government Board, so that the legislation shall not be limited to to-day, but shall be adapted for the future, whether the prophecies as to the vast increase of population are realised or not.

15,390. Do I understand you that the companies suggest an Act of Parliament which should not authorise any particular set of works, but which should authorise such works as the companies hereafter may propose and the Local Government Board may approve of?—Or the Local Government Board may impose upon the companies.

15,391. That would be a novel form of an Act of Parliament, would it not? It strikes me as an extraordinary novelty, that works not described, not enumerated, not specified, but left to the discretion of the companies and the Local Government Board between them in the future, are to be authorised?—Yes, my Lord, but the circumstances do not admit of describing specific work.

15,392. But just let me know whether, in fact, I have got your scheme right. That is the scheme then?—Yes.

15,393. Are compulsory powers of purchase, for instance, to extend to these unknown possible future works?—No. There is no power of purchase requisite. It is merely to enable the companies—they have jurisdiction in their respective districts—to lay down mains; there is no difficulty about that.

15,394. I see. They want no legal powers to open the streets?—None, whatever.

15,395. Even for new mains that are meant for inter-communication and not for supplying their own district?—No.

15,396. Is that so? They have power now to open streets in order to lay down mains for purposes of inter-communication only?—They have power now to open the streets, and to expend money for the supply of their respective districts.

15,397. Quite so?—The only addition is that that supply need not necessarily be rigidly restricted to their particular district.

15,398. Very well: then they require parliamentary powers to enable them to lay down mains to carry water into another district?—To authorise the expenditure of capital for that purpose; but the main, I take it, would be utilised for their own district as well as a means of inter-communication by which that main could carry water beyond their borders.

15,399. Then you raise a legal question which to me seems doubtful, however?—No specific works would have to be authorised.

15,400. (*Mr. Mellor.*) As I understand you, taking two districts that are co-terminous?—Yes, in some districts, as the Commission have heard, the mains of the two companies are in the same streets.

15,401. (*Chairman.*) But you do not suggest, do you, that those inter-communication mains, if I may be understood when I use that word, are also going to serve the purpose of supplying the districts of the several companies?—No, probably not; but I take it that they would be very trivial in importance.

15,402. Trivial or not, you will have to open up the streets, and to stop public highways, and so on, for a purpose that is not to supply your own district. Do you mean to say you can do that as the matter stands without an Act of Parliament?—I do not at all say you can do that without an Act of Parliament.

15,403. Then you are going to have an Act of Parliament to authorise you to make future disturbances of public highways, and the laying down of mains quite in the air, and without any description of what is to be done, and at the discretion of the Local Government Board?—They cannot be described.

15,404. Then Scheme No. 2 is not a scheme that you would recommend Parliament to adopt?—Oh! I do not at all say that. Perhaps, I might be allowed to explain

with reference to the suggestions of Scheme No. 1, as compared with Scheme No. 2. When the Royal Commission was appointed, the Chairmen at their meeting held shortly after that, referred it to the engineers of the eight companies to consider and report upon the third head which was referred to the Royal Commission; and, accordingly, the engineers made that report which your Lordship has of October 1897. That naturally remained in abeyance until last month, when the companies received an intimation from the Commission that they would proceed with that head of the inquiry which it had been assumed would not take place till the other subjects had been inquired into. The Chairmen at once referred it to the engineers to see if they had any further suggestions to make with reference to their report of October 1897; and what is called Scheme No. 2 is the outcome of that reference. But time did not permit of that being submitted to the respective Chairmen, and it has not been before them. That explains why that seems to have been kept back; it really only originated from the intimation from the Commission that they would proceed with that head of inquiry in a way that was not contemplated.

15,405. That intimation was given more than a month ago?—I think not. I think it was the 10th October, speaking from memory.

(Chairman.) I wrote desiring it to be made before the end of September.

15,406. (Mr. Balfour Browne.) That is very nearly a month?—This is the 7th November. I may be wrong, but my recollection is that the letter from the Secretary was dated the 10th October. Of course, we had to call the Chairmen together, and these things will take time.

15,407. (Chairman.) But to go back, if you will forgive me for seeming so persistent, to my difficulty upon this first resolution, do you suggest that the proper mode of dealing with this subject is to have an Act of Parliament that does not authorise any particular plan of communications, but authorises any such communications as the companies may suggest and the Local Government Board approve?—Yes, I do. And for this reason. Assuming you amalgamated all the companies and gave them the same powers over the whole London area, you would of course give them these powers. It would involve that; these would be nothing more than that would produce. The only difficulty you have got to remove, with great deference, is the restricted powers of the individual companies. Consolidate the companies, and they necessarily have these powers.

15,408. I am not very familiar with Standing Orders, but it occurs to me there would be a sort of difficulty about Standing Orders and estimates, and so on, for these works in the future?—No. I am advised, undoubtedly, that there is no difficulty whatever as to Standing Orders. I see my memory was right, my Lord. The letter is dated 10th of October.

15,409. My experience is extremely limited with regard to these local Acts, but do you know any precedent of such an Act as that empowering and requiring companies to execute such works of this kind, as some future President of the Local Government Board may order or approve?—I think, my Lord, it is rather, if I may say so, a play upon words. It is not to authorise by Parliament such works, but to extend the powers under the Waterworks Clauses Act for this purpose adjoining to districts. It is merely to remove the technical application of the Waterworks Clauses Act to the particular district, and make it available for other districts.

15,410. Yes, but you know, as it is, things done under the Waterworks Clauses Act have to be paid for out of revenue, whereas this suggests raising additional capital under special terms which we are coming to in a moment?—No, my Lord, with great deference. The works under the Waterworks Clauses Act are paid for out of capital; new mains are always paid for out of capital.

15,411. Then there is a special Act of Parliament relating to the particular work?—No, pardon me, never; the companies year by year lay down a vast amount—many miles—of mains without any Act of Parliament defining those mains. None of the mains are defined by Act of Parliament.

15,412. Then where do they get the power to raise the capital necessary to lay down those mains?—Because they always take capital in anticipation of what

they will require in a given number of years for the extension of works.

15,413. Then they have had power to raise capital for certain indefinite and undescribed purposes?—Yes, always.

15,414. Very good. Now then, Resolution 2 is only ancillary?—That is ancillary.

15,415. And Resolution 3 is ancillary—that is to say, you would bind the companies to do what either the Local Government Board prescribed or ordered?—Yes, precisely—rigid control of the Local Government Board.

15,416. Confined, of course, to inter-communication?—Oh yes; it is all governed by that head—it is to provide for cases of emergency and accident.

15,417. Now then, No. 4. Do I understand you to say that your suggestion is that there should be no assistance given by one company to another company without the sanction of the Local Government Board?—No, but that the Local Government Board shall have power to authorise that which could not be done, as in the case of the Southwark and Vauxhall, under the present law. At the present moment the Southwark and Vauxhall, for instance, are expressly restricted from supplying another company; but we suggest that the Local Government Board should have power to relax that.

15,418. I see now. Then you would leave the statutory prohibitions of inter-sale standing to enable the Local Government Board to dispense with them?—Yes, my Lord—not necessarily, at all events, to remove them—merely putting it in the power of the Local Government Board, in case of emergency, to say they may disregard it temporarily.

15,419. Then you also propose by that same resolution to empower the Local Government Board to give authority to the companies to take more water from the Thames than the law authorises them to take?—Yes, that again is in case of emergency. However desirable it may be to maintain the water in the Thames, it is still more important to preserve the health and lives of the people of London, and in case of emergency, if the water is wanted, it must be used—to put out fire, or to save the lives of the people.

15,420. So that when the Thames had got down to 77 million gallons a day over Teddington Weir, you would cut it down to 30 or 40?—My Lord, those are, if I may say so, imaginary figures.

15,421. No, indeed, I have taken the very figures of last September—that is a case of emergency?—The reduction would not be so great, but even assuming that, sooner than let the people die, I should say, yes.

15,422. Have you at all ascertained whether the Local Government Board would be prepared to accept, or would ask Parliament for such powers as these?—No, we have not, so far as I know, communicated with the Local Government Board at all. We rather appeal to the Commission in the hope that your Lordship, as Chairman, will see some way out of this difficulty, and we have voluntarily offered to submit to this control, which is a very drastic control.

15,423. Why do you think it necessary to give the Local Government Board power to authorise you to take extra water from the Thames?—If we had power to exceed, we should not want the authority of the Local Government Board. But we felt we could not well put this forward as a thing we might do unless under some control; therefore, it is not that we want the control of the Local Government Board, but that we thought we should not be able to get it without.

15,424. I see, but it seems to me to be pregnant with the assertion that your existing powers of taking supply from the Thames are insufficient in cases of an emergency?—No, pardon me, not so. It may be requisite for one company, and not speaking generally for all. Of course, there are two things to be borne in mind with reference to the subject your Lordship is considering now. You must have the water, and you must have the means of conveying the water. If you have a main which would convey the water, and that main belongs to a company which has not the water to send, the main is of no use. If you have a main connecting the supply of another company which has an abundant quantity of water, but the main is not big enough to convey it, equally the difficulty exists. You must have the two things: you must have the water, and you must have the means of conveying the water,

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and that depends upon the particular company—not taking the whole of the companies together for that purpose.

15,425. Yes; but at present, you know, Parliament has watched rather jealously this right of taking water from the Thames. It has limited the amount that each company may take. You have had a Royal Commission that has recommended an enormous increase, I may say, of the storage capacity of the different companies in order to enable them to get on without increasing their draft from the Thames. We have been told by the engineers to-day that there are but two Thames companies that have practically a surplus. Here are you making a proposal that the Local Government Board shall have power to authorise any company to draw more water from the Thames even in times of the greatest drought, and the greatest want, therefore, of water in the river, in spite of all these precautions that Parliament and the Royal Commission have taken?—Only in the case of such an emergency as calls for the necessity of some such thing. It is only a temporary thing. It is a case which no one anticipates, and which every one hopes and expects will not occur. It is merely to meet the scare which has arisen these last few months, and a repetition of any such disaster. Everyone hopes that the occasion for it will never arise. With reference to the quantity of water taken from the Thames, as your Lordship knows, that is met by the suggestions of storage. If there is adequate storage, then the quantity of water taken from the Thames is wholly immaterial, because every human being knows that at times there is a super-abundance of water in the Thames; therefore, the depletion of the Thames is entirely dependent upon the amount of storage which may be created. There is no danger of unduly depleting the Thames if there is storage enough. At certain periods of the year, of course, there is a super-abundance of water, and it is a good thing to get rid of it.

15,426. (Mr. Mellor.) That is to say, you must either store the water, or you must get it from outside, because you must have the water?—Yes, you must have it; but in the future it is contemplated that the storage will be vastly increased, and that consequently the difficulties which have arisen will not occur.

15,427. (Chairman.) Yes, that is what makes me ask whether you think it necessary to give this extraordinary power to the Local Government Board of increasing the legal supply from the Thames, when you have got your storage?—I do not think we think it necessary. I do not think the companies would ask for it, but they are asked to deal with this subject, and there is this difficulty which has occurred with the East London, and the question is how such a difficulty is to be met, and they feel that it may be necessary, if such a thing did happen, to have this power to give an additional supply from the Thames.

15,428. You heard this morning, I daresay, Hertfordshire raising a wail on the ground that if the New River Company is connected with the other parts of London, it will be pumping the Lea and all the Hertfordshire wells quite dry?—Yes, we have heard that for some years, and it is always the same story.

15,429. Their wells have been a little dry this year, have not they?—And in the whole country. They are very much better off than in many parts of the country which I could name, where there is no water at all absolutely; people have been obliged to leave their houses. We need not go to Hertfordshire for that.

15,430. (Mr. De Bock Porter.) But you would admit, would you not, that in an exceptional year like the past, the companies taken as a whole have a very inadequate margin?—I do not know that I am prepared to admit that. Of course, it is very desirable, as everyone knows, that there should be increased storage; and, therefore, the means of providing against a paucity of water, and, of course, it is quite clear that that may be provided for by storage. The degree of storage people differ about, but no one differs as to the desirability of storage or that storage may be made sufficient for anything. You may have storage of any amount when there is plenty of water to store, if you have the means of holding it.

15,431. (Chairman.) We have had, of course, the engineers of the companies. Perhaps we have not had their views fully, but we have had their views partly, that storage of 18,000 million gallons will be amply sufficient to keep the water supply of London up to

300 million gallons a day without increasing the draft?—Yes, my Lord. Of course, I am not competent to give any opinion upon the figures, but the principle is plain enough to anyone; one need not be an engineer to see that.

15,432. You see the whole point that I am directing the questions to now (for I do not want to ask you about things you do not fully understand) is, that this suggestion of power to take more water seems to me to indicate that the companies think that their supplies are insufficient at the present moment?—No, I do not think that is at all so, but they say, If you are going to overtax us for the benefit of our neighbour, it may be desirable in order to carry that into effect that you should increase our power and for that limited purpose of taking water from the Thames. This is a power that you are to give to one company for the benefit of its neighbour, it does not benefit the particular company. Therefore, to enable it to benefit its neighbour, you may reasonably give that company temporary power to take more water from the Thames.

15,433. Then your fourth resolution is that all this expenditure is to be deemed capital expenditure—I do not know whether I need ask you anything about that—and to be met by issuing debenture stock. As I understand the resolution, you propose that each company shall, in its own district, raise by debentures the money necessary for the communication works then authorised?—Yes.

15,434. Is that so? I mean, do you propose to throw the levying of the capital by debentures upon the companies in the ratio of the extent of works in their district?—Yes. Assume for the moment, if I may say so, that the Southwark and Vauxhall have works which will cost 50,000*l*. They would raise that 50,000*l*. by debenture stock, which would be issued probably to yield about 2½ per cent., and assuming that an adjoining company has 25,000*l*. of works, they will raise that 25,000*l*., and so on. Then the interest on the aggregate of the debentures will be put upon the common fund and distributed between the companies.

15,435. We will come to the interest provisions, which are very ingenious, in a moment. I only wanted to see this: Each company, of course, must be liable ultimately for the principal of the debentures that it issues itself?—I need not remind your Lordship that the debenture stock is never repayable, it is permanent; it merely comes to so much per annum. They are not terminable debentures. All the debenture stock is permanent—it is merely an annual charge.

15,436. It is a grant of an annuity?—It is a mere annuity.

15,437. But if by any combination of accidents the interest failed to be paid, the debenture holder would have to go upon the stock, plant, and effects of each company that issued the debentures?—Yes, the revenue; and, of course, your Lordship knows there is no better security in the world than the debenture stock of the companies.

15,438. Then Resolution No. 6 is one which will, of course, raise a good deal of controversy. You suggest there is to be no contribution to the sinking fund in reference to this stock?—We are not going into the question of sinking fund at all. The only excuse for a sinking fund was that the money which was expended was assumed to yield revenue and profit. It is obvious here that there can be no kind of profit from such expenditure as this, and, therefore, there can be no pretence for putting the sinking fund on such an expenditure as this. It cannot yield a profit.

15,439. Well, each company that takes water is to pay for it, and it will pay for it, I suppose, to the company that supplies it?—Yes.

15,440. For instance, the East London will pay the Southwark and Vauxhall?—But no one contemplates that the thing will happen here. Everyone supposes that, at all events, in the near future, this will be unnecessary—that no company will need this aid. This is merely to guard against accidents. It is not a thing that any one contemplates will be a means of supplying any particular company, it is only to guard against accidents that it is provided. No company wants it.

15,441. The companies think it useful?—I do not think so. The companies have got this reference to the Royal Commission to meet, and they are asked how it can be met, and they are answering that

inquiry. That is not a suggestion of their own. They do not think it is necessary; they think that they can provide for their own respective districts. It may be a facility, it may be proper for the protection of the public.

15,442. Is that the view of the East London?—I cannot speak for the East London. The East London will, I think, tell your Lordship that they contemplate providing for their district quite irrespective of any such aid as this. They do not rely upon this aid.

15,443. In what way?—By increased works. I do not act for the East London, and I am not in a position to give the details of their scheme.

15,444. (*Sir George Bruce.*) It is by increased storage, is it not?—Yes, I believe they contemplate further works yet; but, as Mr. Collins said this morning, I think, he does not contemplate that any company should rely upon this aid, that the companies must protect their own districts, and this is merely to aid them if they should require it. But it is not for the purpose of aiding them at all.

15,445. (*Chairman.*) We were upon the sinking fund clause. You say there is no profit, therefore, no sinking fund?—Yes.

15,446. What I suggest to you is that any company that pumps the water and sends it to another company, will get a profit, because they will get paid for the water such price as an arbitrator thinks right?—If that event happens; but then, as I say, it is not contemplated that that event will happen, except in isolated cases.

15,447. Then, what is the use of expending half a million in establishing an elaborate system of communications that is not going to be used?—It is merely an insurance against accident.

15,448. (*Sir John Dorington.*) In fact, it is dead capital?—It is dead capital to guard against accidents in some unlooked for event, and to satisfy the public mind.

15,449. (*Chairman.*) You say that in a subdued voice. I think you had better say it a little louder. Then your Resolution No. 7 is this: "Subject to reasonable contribution by any company taking and utilizing, " by means of the proposed works and powers, water " which it would not otherwise have been enabled to " take and utilize, the interest on debenture stock " applied by the respective companies for the foregoing " works to be borne by the eight companies in proportion to their respective water rentals." That preamble about the reasonable contribution refers, I suppose, to Resolution 9, does it?—Yes. As to the reasonable contribution, as your Lordship sees, if any company takes water—I will assume for the moment that the East London Company takes some water, and none of the other companies want it by these mains—then the arbitrator must decide what is the reasonable contribution to the whole expenditure to be paid by the company taking the water, and the balance is to be borne by the respective companies in accordance with their water rental.

15,450. That is to say, to follow out an illustration you have put, you would suggest that the East London Company shall pay the fixed price, or the award price, for the water it takes, and in addition to that, pay a proportion of the debenture interest as the arbitrator shall think reasonable?—Yes; but, of course, it is impossible to say what that should be. The East London may want to take one million or may want to take 10 millions or more; they may want to take it for a month; they may want to take it for a week; they may want to take it for two months; you cannot define it.

15,451. I only want to see that I understand it?—The scheme is that the arbitrator shall do it year by year, having regard to the events of that year.

15,452. Just let me try and apply it to the facts that have occurred this year. The East London Company has been taking, we understand, something like 14½ million gallons a day, I think it is, of water from other companies. It would have to pay 3d. or 4d. per 1,000 gallons, or whatever it is, for that quantity of water?—That it takes from any other company?

15,452A. Yes?—That the joint concern have no interest in.

15,453. Quite so, it pays for that. Then no other company, I will assume, has taken anything from the associated works, therefore, the East London Company would have to pay either the whole or the greater part of the interest upon the half million, or whatever it was of debenture stock that had been originally raised?—That must, of course, depend upon the arbitrator. It really is paying for the carriage of the water, if I may say so, which they get from another company.

15,454. Yes, but in the contemplation of those who passed this resolution that is what will happen?—No.

15,455. What will happen, what proportion of the interest of the debenture money will the East London have to pay in the events of this summer?—I cannot go into the figures, but it is not contemplated that they should have the whole burden. As I said before, we look upon this as a means of insurance against accidents which all the companies benefit by, and to which they contribute in proportion to their respective interests. But if it turns out that from this insurance one company gets a vast benefit, then that company must pay more than the proportion it otherwise would pay.

15,456. I am sorry to interrupt this examination, but would it be convenient for you to be here to-morrow?—Yes.

(*Mr. Pember.*) May I ask you to say what evidence you will take to-morrow? Mr. Middleton, whose examination was interrupted for the purpose of taking this particular subject, says it would be almost impossible for him to be here to-morrow morning.

(*Chairman.*) I think we shall not want him. I think it is clear that we shall not finish this subject to-morrow. We will do our best, of course, to get through it as quickly as we can.

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Hollans.
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[Adjourned till to-morrow at 12 o'clock.]

Recalled,
Q. 15,457.

THIRTY-THIRD DAY.

Tuesday, November 8th, 1898.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Honourable JOHN WILLIAM MELLOR,
Q.C., M.P.
Sir JOHN EDWARD DORINGTON, Bart., M.P.
Sir GEORGE BARCLAY BRUCE, Knt., C.E.

ALFRED DE BOCK PORTER, Esq., C.B.
Major-General ALEXANDER DE COURCY SCOTT, R.E.
ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary*.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River Company.
Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.
Messrs. Bircham and Company appeared for the Southwark and Vauxhall Water Company.

15,456a. (*Mr. Pember.*) My Lord, will you permit me, before the witness is called, to withdraw from a statement which I made yesterday at Question 15,172. I need not read it. It was a certain interpretation which I put upon the 7th, 8th, and 9th clauses of the Memorandum, which was read on the subject of inter-communication between the mains of the companies. I simply admit at the moment I took a lawyer's view of what the meaning of Clause 9 particularly was, and I went, no doubt, too far, because my suggestions came to this—that all the companies which accidentally might be using the water supplied by those inter-coupled mains

during any particular year would be the companies which paid practically all the interest. I see now that would be manifestly unfair, and that the real intention of the arbitration clause was not that. I am happy to say I was corrected in the first instance very frankly by Mr. Hollams at Question 15,453, and his correction remains. I may also say, before sitting down, that nothing that I say could bind any company, and that perhaps my present personal explanation might not be particularly interesting to the Commission, but I have been asked to make it, and I do make it, and I trust that you will accept it.

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Mr. JOHN HOLLAMS recalled and examined.

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15,457. (*Chairman.*) To resume your examination, you were explaining yesterday that under Clause 9 of the companies' resolutions the arbitrator would settle what proportion of the interest the company should pay that had made use of the inter-communication system. Can you give us any principles upon which that proportion could be settled? I mean, what is to guide the arbitrator? For instance, supposing the events of this summer occurred again—one company, the East London, requiring assistance, and getting it from this inter-communication, how would an arbitrator be guided in saying what proportion they were to pay?—I think it must be treated rather as a way-leave. Of course, we are not speaking of the payment for the water which they take from another company, but payment for those works.

15,458. Payment of the interest on the debentures?—Yes, it will be in the nature of a way-leave, in proportion, I should think, to the fair quantity of water taken, the time during which it is taken, and the distance from which it is taken. Probably the contribution may not be very heavy, because, as I said, the essence of the thing is, that this is an insurance which the companies contribute to for their mutual protection, and it is to be borne in mind that it is an insurance against a risk which does not fall upon them, because they are protected from accident or drought. As your Lordship knows, their obligation to supply is restricted; it is subject to exception in drought or accident. Therefore, we are voluntarily protecting ourselves, at our own expense, against that for which we should not be liable, merely to meet the view of the public.

15,459. I am bound to say you have not made my mind clear yet. I suppose myself an arbitrator sitting upon such events as have occurred this summer, an inter-communication system that cost so much—300,000*l.* or 400,000*l.* in debentures, and a certain sum of interest to be paid, and a system used providing for one company only, the East London—upon what principles am I to charge a part and that only upon the East London, or the whole or none?—Is it not essentially a case for an arbitrator to decide, a practical man, having regard to the circumstances of the particular year with which he is dealing, and the events of that year.

15,460. I ask you to assume the events of last autumn repeated over again—what would guide me as an arbitrator in saying what the East London were to pay?—I do not know that I am prepared to give any figure. I think it must be decided by a practical man of business, what under the circumstances he would think reasonable.

15,461. The post of the arbitrator would be a very important one, would it not?—Yes, the whole circumstances would have to be taken into account just as if there was an accident on one railway, and you had to utilise another railway; the contribution must depend upon circumstances, the extent to which the use is made, and all the circumstances of the case.

15,462. You do not think that the circumstance that one company alone has made use of this system would be sufficient to justify the charge of interest upon the debenture fund upon that company?—No, certainly not; I do not think it is contemplated for a moment.

15,463. (*Mr. Mellor.*) I suppose this system would apply to a break down just as much as to a drought?—Certainly.

15,464. And therefore any company might be liable?—An accident might happen in any district irrespective of drought, and this is to guard against both for the protection of the public in each district.

15,465. (*Chairman.*) As I understand the scheme of the companies, if no water is taken by any company, if the inter-communication system is not used, each company pays the interest in proportion to its water rental?—Yes.

15,466. On the other hand, if one or more companies use the water of other companies they are to pay for it?—The joint concern has no interest in that. May I say the East London take water from the Southwark and Vauxhall Company; the other six companies have nothing to do with that. That is a mere payment for the water which they take from that company.

15,467. True?—Of course, the supplying company has the expense of pumping that water, filtering it, and the whole thing, and the other company pays for it. The joint concern has no interest in that.

15,468. No, any extra expense entailed by the use of this inter-communication water falls upon the supplying company?—Yes.

15,469. All that the supplying company can get is payment for that water?—Payment for that water.

15,470. Would not it be a simple plan to adjust the payment for the water at such a figure as should meet the proper liability of the company taking the water?—No, because it goes into a different pocket. The payment we are discussing goes to the joint fund, and the other goes to the individual company which incurs the expense of obtaining the water and pumping it and filtering it.

15,471. (*Mr. De Bock Porter.*) Do you assume that the contracting companies would give easements without charge—they would mutually give easements to one another for the passage of water from one company to another?—No, it is probably not of very vital importance, that part of it, but it has been treated in the nature of a way-leave. Assume that instead of water it is beer, you pay for the beer to the company who supplies the beer, and you pay for the carriage of the beer to those who carry it.

15,472. (*Mr. Mellor.*) Supposing, for instance, that the water is taken in, we will say, by one company, that it passes through the mains of a second company and goes ultimately to the third company that wants the water, does the second company get anything out of this?—No.

15,473. There is no way-leave?—No, there is no way-leave there.

15,474. (*Chairman.*) It gets relief in the payment of debenture interest—the second company does?—I do not quite follow.

15,475. You say that the arbitrator has to fix what the receiving company is to contribute towards the debenture interest?—Yes.

15,476. Well, then, in the proportion in which it does contribute to the debenture interest, the intermediate company that Mr. Mellor suggested, is relieved *pro tanto*?—Yes, *pro tanto*.

15,477. The companies are content to leave themselves in the hands of the arbitrator, because it seems to me this arbitrator must decide like an autocrat, with very little to guide him?—Certainly; arbitrators generally do, I think.

(*Mr. Pember.*) I am not sure that all the companies are satisfied with No. 9. I do not know.

15,478. (*Chairman.*) It seems to me a little vague, I confess. (*To the Witness.*) Even taking resolution 8, you do not think you can fix the price of the water without calling in the arbitrator?—I do not imagine that there would be any practical difficulty. That appertains to the two companies—the supplying and the supplied company—and the joint companies have no interest in that matter at all.

15,479. To take your illustration of the beer: the beer is not supplied until not only the barrel is filled, but until the load even comes to my door; and the load even comes from the intermediate company which has not pumped the water?—Yes.

15,480. Therefore, they do contribute to the supply in that sense?—The carriage of it.

15,481. (*Mr. De Bock Porter.*) Well, they do not themselves, but they afford every facility for the passage of water from one company to another?—Certainly.

15,482. Without special charge?—Yes, without special charge.

15,483. (*Mr. Mellor.*) Yet I suppose that every company would have to consider that this lot might be their lot some day?—Yes.

15,484. There might be a breakdown?—Yes.

15,485. (*Chairman.*) This price for the water, I take it, is contemplated, may be much higher than the ordinary price?—I should think not. I should think lower. I think the evidence before your Lordship yesterday was that, in fact, the East London have been paying considerably lower than the ordinary price for the assistance they have had, and a price which yields no profit.

15,486. Yields no profit to the supplying company?—To the supplying company. I believe the actual cost with most companies is 3d. or 4d. per 1,000 gallons, the actual cost of the water.

15,487. On the other hand, the receiving company, the company that receives the additional supply, sells it at its own rates to the consumers?—No, with great deference. Of course, in a sense, to a certain extent the company do sell the water; but of course the supply is chiefly by water rate, and the company does not sell the water at all. It supplies the water, and undertakes to supply the water subject to the exceptions of drought and accident. It is a common fallacy, with great deference, to say that the companies sell the water; and people put in the newspapers that they sell, and do not deliver what they sell. They do not sell at all. They agree to lay on the water; they agree to maintain an efficient supply unless they are prevented by drought or accident; and the water rate is based on that principle. It does not depend upon the amount of water taken. It depends really upon the rateable value of the property; it is purely a rate.

(*Sir George Bruce.*) If it is supplied by meter, it does.

(*Mr. De Bock Porter.*) It is in consideration of the rent charged; they supply the water if they can.

(*Witness.*) I would not put it in that way. They are bound to supply the water unless prevented by accident or drought.

15,488. (*Mr. Pember.*) Or frost?—Or frost.

15,489. (*Mr. De Bock Porter.*) But their rentcharge is not to be endangered?—No, they are bound to supply water gratuitously.

15,490. (*Mr. Mellor.*) And the ratepayer is bound to pay his rate, whether he gets water or not?—The ratepayer does not pay as a ratepayer, it is for consuming in the house.

15,491. As a water consumer?—Yes, a water consumer.

15,492. Practically he is a ratepayer?—Yes, it is the same as the ordinary rates. If the streets are not watered you still have to pay the water rate. It is the same principle as all the rates; whether you consume much water, or whether you consume little, the payment is the same. If you live in a large house in Park Lane, and the house is only inhabited for one month in the year, you pay for 10 times as much water as a man living in the same sized house in Bethnal Green who is there all the year round, and consuming water all the year round.

15,493. (*Chairman.*) But, on the average, the companies find that they have sufficient remuneration for the water they supply?—I should not like to say that. I believe your Lordship will find that that is by no means the case in the east of London. Many houses are supplied at a very substantial loss—a very considerable loss. The rich pay for the poor, beyond all doubt.

15,494. It would seem to be a more logical system, then, if everybody was supplied by meter?—Well, of course the objection to that, as your Lordship knows, is on sanitary grounds.

15,495. That is easily met by saying you shall start your initial price at an amount of water that is amply sufficient for sanitary purposes for the tenement in question?—Well, I am not, perhaps, competent to

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enter into that question. I know there are very serious objections on sanitary grounds to limit the supply of water and the lavish expenditure of the water, which is frequently called waste of water, and, perhaps, rightly called waste of water, is defended, because they say it is beneficial on sanitary principles.

15,496. There can be no sanitary advantage in leaving the tap running all night?—I believe not, but it is generally supposed there is; some people think there is. I believe the better opinion is that it is mischievous, that you send an unnecessary quantity of water into the sewer. But I am not competent to speak about that. Perhaps your Lordship will allow me to mention a thing with reference to inter-sale. The Staines Reservoirs Act expressly prohibits inter-sale, and the Thames Conservancy Act of 1894, section 295, which applies to inter-sale, is qualified in its inception, and particularly your Lordship will find, by the proviso at the end: "Provided that every agreement for a continuing supply under the powers of this section shall be made in writing, and shall contain due provision that the supply so made shall not be withdrawn without the consent of the purchasing company." That clause is manifestly unsuited to what we are now considering, it points to a permanent arrangement, with a written agreement, and the supply is not to be withdrawn without the consent of the other company.

15,497. There are a great many clauses which will have to be repealed, in order to render this inter-communication system possible, are there not?—Yes, I think perhaps a few words would do it, if it is necessary. Perhaps your Lordship will allow me to refer to a circular recently issued by the Local Government Board, in which the Local Government Board seem to assume that practically they have got those powers, or most of them. The circular is dated October 1897, after the Act of last year, and the circular contains this provision:—"The Commission"—that is the Railway Commission—your Lordship recollects that the Act of 1897 gave the powers as to water to the Railway Commission, and the circular to which I refer from the Local Government Board contains this paragraph:—"The Commission may order two or more companies to carry into effect an order of the Commission, and to make mutual arrangements for that purpose, and may further order the companies, or, in case of difference, any of them, to submit to the Commission for approval a scheme for carrying into effect the order, and when the Commission have finally approved the scheme, they may order each of the companies to do all that is necessary on the part and within the power of such company to carry into effect the scheme, and may determine the proportions in which the respective companies are to defray the expense of so doing, and may for these purposes make, if they think fit, separate orders on any one or more of such companies, but this provision does not authorise the Commission to require two companies to do anything which they would not have jurisdiction to require to be done if such companies were a single company;" and then it refers to section 14 of the Railway Commission Act, which says:—"The Commissioners may order two or more companies to which this part of this Act applies to carry into effect an order of the Commissioners, and to make mutual arrangements for that purpose, and may further order the companies, or, in case of difference, any of them, to submit to the Commissioners for approval a scheme for carrying into effect the order, and when the Commissioners have finally approved the scheme they may order each of the companies to do all that is necessary on the part and within the power of such company to carry into effect the scheme, and may determine the proportions in which the respective companies are to defray the expenses of so doing, and may for the above purposes make, if they think fit, separate orders on any one or more of such companies." On principle, your Lordship sees it is very much upon the lines of these suggestions that schemes are to be put forward for approval as we suggest to Local Government Board, who, of course, would depute it, or to the Railway Commissioners, and the Local Government Board seem to think that that Act of last year gives them power to do it.

15,498. (Mr. Mellor.) Suppose that the companies act without powers and make these connexions; where is the remedy?—Injunction.

15,499. Would the Court of Chancery interfere by injunction where there is no damage—there can be no

damage proved, I suppose?—I should imagine the Court would be reluctant to do it, but I suppose they could.

15,500. At whose instance, do you think?—A shareholder, I suppose, would say "You are applying the funds of the Company for an unauthorised purpose, and therefore it is *ultra vires*."

15,501. Supposing that is so, that would be one remedy by injunction?—Yes.

15,502. Is there any remedy before the Commissioners under that Act of Parliament?—I should not like to say. It is in very general terms, and the Local Government Board seem to think it applies to the companies all the powers to which the Railway and Canal Traffic Act applies. Whether it incorporates them or not, I am sure I do not know.

15,503. Suppose the Commissioners were properly put in motion, they would have power to restrain the companies, would they not, from inter-communication? The Commissioners would have power, as I understand, to order inter-communication?—Yes.

15,504. Would they have the other power if put in motion to restrain inter-communication?

(Mr. Pember.) That is the 51 and 52 Vict., chap. 18.

(Witness.) That is the Railway and Canal Traffic Act, to which the Local Government Board refers.

15,505. (Mr. Pember.) Which they seem to think gives them power to order all this?—Yes.

(Chairman.) The Act of 1897 says that: "All enactments relating to the Railway and Canal Commission (except section 2 of the Railway and Canal Traffic Act, 1894, which restricts the power to award costs) shall, with the necessary modifications, apply to the Commission for the purpose of their jurisdiction under the Act."

(Mr. Pember.) I will get the Act of 51 and 52 Vict. and look, because it is on that that the Board would base their idea that the Commission have the power to order all these things.

(Mr. Pope.) The Railway Act simply gives a general power to facilitate railway traffic.

(Witness.) That is the Railway Act.

15,506. (Chairman.) The Railway Commission did not get any jurisdiction under the Act of 1897, unless the complaint is made to them as to the quality or quantity of the water supplied by any of the Metropolitan water companies for domestic use?—That is so.

15,507. There must be a complaint of that kind before there can be any motion at all?—That is only machinery. I should think there would be no practical difficulty, but personally, I should very much doubt whether that Act would remove the statutory difficulties which seem to exist. It can only give the Railway Commission power, I should imagine, restricted by the statutable restrictions which exist, but the principle, I submit, is analogous.

15,508. Then you want the repeal of all statutes that prevent those water companies from supplying water outside their district?—Yes.

15,509. You want to repeal the statutory provisions that prevent them from expending money in works outside their district?—Yes.

15,510. (Mr. Pember.) Surely the statute would not give the Railway Commissioners power to make an order upon the companies which would involve a breach of any other statute?—I should think not.

(Mr. Pope.) The whole right of the Commissioners to make any order is limited by the respective powers of the companies; those are the limiting words at the end of the Act: such companies shall, according to their respective powers, do so and so. We have constantly had the contention that an order could not be made upon us because it was not concluded out of our statutory powers. For instance, take the Hastings case, the Commissioners made an order upon one company to enlarge the Hastings station, and they had no power to do it, and the order was held to be bad on that account.

(Chairman.) I will not take upon myself to express the slightest opinion upon the subject.

(Mr. Pember.) It seems to me very doubtful, at all events.

(Witness.) Perhaps your Lordship will allow me to refer to another matter which gives analogous power in the Public Health Act of 1875, section 61: "Any local authority for the time being supplying water within their own district may, with the sanction of the Local Government Board, supply water to the local authority of any adjoining district on such terms as may be agreed upon between such authorities or, as in case of dispute, may be settled by arbitration in manner provided by this Act"; so that the Local Government Board have powers to authorise the supply of water where it is not permitted by law.

15,511. (Chairman.) Well, in addition to the clause that I have already suggested, would you also want power to sell water upon new terms; that is, no longer to sell water to a consumer at a rate fixed by the rateable value of his house, but to sell water to another company for distribution to consumers at a rate either agreed or fixed by arbitration, which is a new power?—With great deference, no. We do not want any such power. We do not deal with the water at all. This scheme is merely a mode of communication for the water, and the clause in this is merely to provide that the company supplying water shall be paid for that water. It is no part of the scheme at all.

15,512. At present the company has no power to sell water to another company at a rate either agreed or fixed by arbitration; you would want special clauses to give that power to each company?—Of course it is subject to agreement; but a great deal of water is supplied by agreement. But that is a mere matter between the supplying company and the company desiring the supply. The joint purse has no concern in it at all.

15,513. No; but I mean that the Act of Parliament which establishes this system will have to provide for that among other things?—Well, of course it may be; just a line or two in it would do; but there is nothing to prevent their doing it.

15,514. It will not be a simple Act of Parliament that will establish this system?—I think so. It is rather difficult to say what is a simple Act of Parliament. But I do not think there is any difficulty about it.

15,515. Very well?—Probably your Lordship is acquainted with the official memorandum as to the duties and powers of the Local Government Board which they have published, and which was issued by them some years since, and which is printed in Colonel Bolton's book, at the end, which shows the extensive powers they now have.

15,516. That who now have?—The Local Government Board.

15,517. They have immense powers with local authorities?—Only on the water question. I mean with reference to the metropolitan companies. This memorandum is with reference to the metropolitan companies.

15,518. What is there material not in it; could you read it?—I need not trouble your Lordship with it; it summarises their various powers, shows that they have powers to make regulations; they have very strong powers, not only over the water companies, but over the consumers as to waste, &c., with reference to the regulations. It is merely with a view of showing that it is nothing new to give the Local Government Board very extensive powers; they have already very extensive powers.

15,519. But those powers must be in some statute or other?—Yes, they are in a variety of statutes; but they are summarised in the official memorandum issued by the Local Government Board, which summarises and refers to those powers, and gives the different Acts of Parliament.

Cross-examined by Mr. H. L. CRIPPS.

15,520. I just wish to put one or two questions. I need not remind you of the enactments with which you are familiar in the Staines Reservoirs and in the Southwark and Vauxhall Acts, as to the effect of these Acts in the event of the ultimate purchase of the water undertakings by a local authority?—Yes.

15,521. You remember those?—Yes.

15,522. It is provided by section 84 of the Staines Reservoirs Act, 1896, that, in the event of purchase within a certain period:—"Nothing in this Act contained shall extend, or be deemed or construed to

"extend, to authorise the company to bring into account, or to make any claim in respect of any advantages conferred on them by or resulting from the passing of this Act." I want to ask you how, in your opinion, this scheme which you now propose would bear upon that question. Do you propose to incorporate that provision in the present scheme, or to omit it?—So far as the present scheme goes, it would tend to lessen, and not to increase the value, because we propose to take a voluntary annual burden upon ourselves for the protection of the public.

15,523. Well, let us just examine that for a moment, because I think it arises out of one or two questions. Let us see for the moment how this scheme would affect the question in the case of two companies like the East London and the Southwark and Vauxhall. We had it in evidence, that the Southwark and Vauxhall are now supplying for a money consideration certain water to the East London Company which, at all events, does not belong to the Southwark and Vauxhall Company. I presume you agree that in any arbitration the actual income of the Southwark and Vauxhall Company would have to be taken into consideration?—No doubt.

15,524. And if over and above the revenue which they derive from their legitimate charges, they are deriving a revenue from the sale of Thames water, I suppose that would be a legitimate operation, and the revenue from the sale of Thames water would have to be taken into consideration?—I imagine the aggregate is a very trifling sum even in the present year. As I said yesterday, no one contemplates the recurrence of such a state of things. We are guarding against a possible event which we hope and believe will not arise.

15,525. We need not discuss what the amount of the payment will be, it is the principle I want to understand. An additional income means an additional purchase money, does it not?—I imagine it is a very small matter.

(Chairman.) It is not the additional net income, Mr. Cripps.

(Witness.) No.

(Chairman.) Because the water is sold at cost price.

(Mr. H. L. Cripps.) I do not know that that would be so at all, the water is the water of the Thames, and does not belong to the Southwark and Vauxhall Company.

(Witness.) But they have to filter and pump it, and incur all the expense. The expense is enormous.

(Mr. Pember.) By the fact that the income of the Southwark and Vauxhall is increased that of the East London would be decreased, so that in the event of the purchase of all the companies there would be no increase.

15,526. (Mr. H. L. Cripps.) What would be the effect in this case upon the East London Company. The company at the present moment is, by the admission of everybody, to use the terms of the Public Health Act, incapable of fulfilling its statutory obligations, is not that so?—No, I do not think so at all.

15,527. Supposing that assumption is put forward, if it could be established, it would have a material effect upon the purchase money payable to the East London.

(Mr. Pember.) There is an exception against drought, Mr. Cripps.

15,528. (Mr. H. L. Cripps.) If the company is capable of fulfilling its obligations, as we all know, a certain number of years of income would be probably awarded, and if it is incapable of fulfilling its statutory obligations, a certain less number of years purchase would be awarded; do you agree with me?—No, I do not agree with the general proposition; if you mean permanently incapable I do, but incapable for a month or six weeks from exceptional circumstances would make no appreciable difference at all.

15,529. We will not discuss the question of the incapability or otherwise, that is not the question here, but to whatever extent that might affect the question or principle of mutual assurance, you agree that it put the company in a different position?—I do not think so.

15,530. You think that a system of mutual assurance would not put the companies in a different position?—I did not use the expression "mutual assurance."

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15,531. I think you used that expression?—No, I used the expression "assurance."

15,532. Very well, "assurance." I do not wish to ask you any more questions upon this point than merely to suggest this matter for consideration, but after those answers, I should like to ask you eventually whether or not you propose that this Bill, which you hope to be so simple, would not include section 84 of the Staines Reservoirs Act of 1896?—I do not think it is worth serious discussion; I certainly should not propose to put it in.

(Chairman.) What is this Clause 84, Mr. Cripps; I have not got the passage in my mind.

15,533. (Mr. H. L. Cripps.) It was a clause which was inserted not only in the Staines Reservoirs Act, but in the Southwark and Vauxhall Act when they got fresh powers of taking water. "If the undertaking of any" of the three companies be purchased within seven "years from the passing of this Act otherwise than by" agreement by any public body or trustees, nothing "in this Act contained shall extend or be deemed or" construed to extend to authorise the company to "bring into account or to make any claim in respect" of any advantages conferred on them by or resulting "from the passing of this Act." In other words that Act was to be a temporary measure, and the privileges which were then given were not to be bought in again by a public authority in the event of purchase. And there is a similar section in the Southwark and Vauxhall Act. I ask Mr. Hollams—because I venture to point out to him that this question is certainly one which will come up for discussion on his Bill—whether in the Bill which he proposes to introduce, he is or is not prepared to insert a clause of that kind?—If that was the only opposition to the Bill I should certainly insert the clause and get rid of the opposition. Perhaps your Lordship will allow me. I have been referred to section 18 of the East London Waterworks Act, 1897, which enables that company on the one hand, and any one or more of the Metropolitan water companies on the other hand, to enter into and carry into effect contracts of agreement with reference to the user by the company of any works belonging to such other company. But only in cases of emergency with the consent of the Local Government Board.

15,534. What are you reading from?—The East London Water Company's Act of last year, 1897. That is subject to the consent of the Local Government Board and to be for such periods as the Local Government Board may prescribe. It is all upon the same principle of the Local Government Board having a control.

15,535. (Chairman.) I just want to follow up Mr. Cripps's suggestion for a moment, so as to make my own mind clear about it. Would you say that the East London Company being prevented by drought from giving a full and constant supply to its district is not departing from or violating its statutory obligations?—Certainly.

15,536. This scheme if carried will enable them to do something which they are not bound to do by statute?—Certainly.

15,537. And upon that ground you put it that there is no occasion to insert a clause similar to clause 84 of the Staines Reservoirs Act, namely, excluding the company from availing themselves of any benefit they may have derived under the inter-communication scheme?—No, I submit that we are volunteering to have put upon ourselves a serious annual burden for the protection of the public against a risk which would not fall upon us.

15,538. Your short supply being excluded by statute does not diminish your income a penny?—Not at all.

15,539. You can get your rates?—Yes.

15,540. And your full supply aided by the inter-communication scheme does not increase your income?—Not a bit.

15,541. However, you do not object to such a clause if it will satisfy the County Council?—As I say, I would not go into Committee if that was the only opposition to the Bill.

(Chairman.) Are the engineers of the different companies here. We should be glad to ascertain at first hand what the exact resources of each company are. Is the engineer of the Chelsea Company present, for instance?

(Mr. Rickards.) I am afraid he is not present, but did I understand you to ask what the resources of the company were?

(Chairman.) Well, I was rather startled by hearing that some of the companies have no surplus to communicate.

(Mr. Rickards.) Well, the Local Government Board Report for 1897–98 says this: That the average daily amount distributed by the Chelsea Company from the Thames was 12,283,000 odd. That appears in the Local Government Board Report. Their powers of abstraction from the Thames are 22 millions a day. It follows, therefore, that they have a margin on the average of nearly 10 millions a day.

(Chairman.) I shall be glad to know from the engineer whether that margin is supplied by sufficient pumping power and sufficient filtering power so as to enable them to deliver 10 millions of filtered water.

(Mr. Rickards.) We shall make arrangements for the engineer to attend if you wish him to do so. If you desire him to attend, of course he shall be sent for.

(Mr. Pope.) Mr. Collins gave some evidence on that point.

(Chairman.) Yes, but he gave it by hearsay only. I want shortly to get it from the engineer of each company.

(Mr. Rickards.) Would your Lordship wish him to attend in the afternoon or the next sitting?

(Chairman.) Very well.

(Mr. Rickards.) Would next Monday do? I am afraid he is not here, and he has a good many duties to perform. I do not know whether we can get him here this afternoon.

(Mr. Pember.) One of the other companies is the West Middlesex, which has a surplus. Would you like him to come? We will try and get him here.

(Chairman.) We want to ask the engineers of each of the companies what amount of surplus supply can be furnished by the existing plant of the companies.

(Mr. Rickards.) I quite understand; he shall be in attendance next Monday if that will satisfy your Lordship.

(Chairman.) Very well.

(Mr. Pember.) If that will do for him it will do for us too.

(Mr. H. L. Cripps.) I am desired to suggest that it would be a great convenience to us, and probably to all parties also, if this Scheme No. 2, which has been referred to, were put in some definite form upon the notes officially, so that we should know what it was. No doubt it has been explained to a certain extent in evidence, but so far as I am aware we have not got Scheme No. 2 in the form of a proposition on paper at all.

(Mr. Pope.) You have got all the scheme that I have got, or that anybody has got; you have got the resolutions, which have not been formulated into a Bill.

(Chairman.) No, no, it is the Scheme No. 2.

(Mr. Pope.) I beg your pardon.

(Chairman.) It is the Battersea Scheme.

(Mr. Pope.) That has not been given except by Mr. Collins.

(Mr. H. L. Cripps.) If there was some plan of it, just indicating, for instance, the way in which this land is to be dealt with.

(Chairman.) I hope before we have finished our inquiry upon this branch of the subject the companies will let us know whether they officially approve of the scheme.

(Mr. Pope.) They meet to-morrow, and we propose to submit the scheme to them, and then, when it has been approved, no doubt it shall be formulated and put into a definite shape.

(Mr. H. L. Cripps.) Thank you; so long as we know what scheme is approved that is all we require.

(Chairman.) The companies whose engineers we shall be glad to see are the Grand Junction, the West Middlesex, the Chelsea, and the Lambeth.

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Sir HENRY KNIGHT called and examined.

15,542. (*Chairman.*) You are an alderman of the City of London, and you have been Lord Mayor in 1882-83?—Yes.

15,543. And you are Chairman of the Southwark and Vauxhall Company?—Yes.

15,544. And have been so for how many years?—Something like 22 years, I think.

15,545. Have you considered those schemes of inter-communication?—Yes.

15,546. I presume you consider, as your engineers do, that they are practicable?—Yes.

15,547. Do you consider them desirable?—I consider them desirable to meet the public outcry at the present moment, but I am quite certain that if they are carried out they will seldom or never be wanted, and seldom or never be brought into use.

15,548. If we have another year of drought, such as this, you would hardly, I suppose, say that they would not be wanted next year?—The present condition of things is quite sufficient to meet the case of another drought like this, should it occur next year.

15,549. The present condition of things?—Yes.

15,550. How has the condition of things been altered since the drought of last autumn?—It has been altered because of the connexions which have been made between the New River Company and the connexions of the West Middlesex Company and the Grand Junction Company, between the New River and the East London; and, I believe, between the East London and the Kent; and between the East London and the Southwark and Vauxhall.

15,551. They have not yet enabled the East London to resume a constant supply?—No; because you remember the East London did not have this assistance so early in the year as they would be able to have next year. Consequently, it had to draw upon its reservoirs to a much greater extent, and earlier than it would have to do next year, when it can avail itself of this extra assistance. I would like to show you how this is, if you will permit me.

15,552. Pray do so?—The New River Company, we know, have been supplying the East London with 6 million gallons per day for some weeks past. They have now made connexions with the West Middlesex and the Grand Junction, which enabled them to supply another three million gallons; that is nine million gallons. They have connexions with the Southwark Company, whereby they can get six million gallons; that is to say, 15 million gallons per day at the present moment are available, and will be available next year, absolutely available. I will leave out of consideration the small quantity supplied by the Kent Company, because it does not affect the question. Now, you remember there are 15 million gallons per day there, which can be delivered early in the summer of next year, and so save their reserves. Not only can this amount now be delivered, but the amount can be augmented by a few works which can be carried out this autumn. For instance, if the connexion between the East London and the Southwark and Vauxhall Company is made larger, the Southwark and Vauxhall Company, instead of giving six, can give 10 millions per day. But other engineering works are necessary in order to enable them to do that; that is to say, the present 20-inch main will not pass more than six million gallons. If they laid a larger main it would carry 10 million gallons. We have arranged with the Kent Company to couple up with them, and the Kent Company, I believe, will be able to afford an extra supply of two million gallons. That extra two million gallons can be taken over into the East London district through our mains. That makes a total of six million gallons beyond the 15 million gallons which can now be delivered. Then again, we have arranged, or just upon arranged with the Chelsea Company for coupling-up with them, and that company (I speak subject to the correction of their engineer, but I judge from the figures given in General Scott's report) that that company would be able to supply two or three million gallons of filtered water to the assistance of the other companies, because I judge from the extent of their filter beds and their works, although they deliver now 12 million gallons in their district, that the capacity of their works would enable them to filter or manufacture as much as 15 or 16 million gallons. Taking it at

15 million gallons, that is three million gallons more. Add that to the other six, that is nine million gallons more, which can be at the service of the East London Company as early as they like. Add that to the 15, which gives you 24 million gallons which the companies with their present powers could, without any trouble whatever, place at the disposal of the East London Company.

15,553. (*Mr. Mellor.*) Under their present powers?—Yes, under their present powers.

15,554. (*Sir George Bruce.*) Is that filtered or un-filtered water?—I am speaking of filtered water entirely.

15,555. That additional 24 million gallons, they have power to filter, have they?—Yes.

15,556. They have filter-beds for filtration?—Yes, they have power to filter.

15,557. (*Major-General Scott.*) How is that Chelsea water to be conveyed to the East London Company?—I thought I had explained that we have pretty well arranged with the Chelsea Company to couple our mains with theirs and the water would come from the Chelsea Company through the Southwark and Vauxhall Company into the East London district.

15,558. And you can carry that extra quantity in your mains?—Yes.

15,559. Always?—Yes, so our engineers have advised me.

15,560. Can you guarantee the supply from your company, which is dependent upon what you can spare, for a longer period than one year?—We could. Yes, we could for a longer period than one year—we could for some few years, because I have always had my eye steadfastly fixed upon the necessity of having works in excess as soon as I could get them. You know the enormous difficulty we have had to get Parliamentary powers on account of the opposition of the London County Council, but by persistence with a great many Bills and with a little at a time we have put our company in such a position that we can filter or manufacture and deliver a much larger quantity of water than we want at the present moment for our own purposes. But, of course, that is to provide for what we shall want in a few years for our own purposes. But before that time arrives, the East London Company and the other companies will have put themselves in a position to satisfy their own requirements. But this assistance will only be wanted for three or four, or perhaps five years. I have not the slightest doubt that the East London will do everything that is necessary to place themselves in a satisfactory position and to take time to construct those works.

15,561. If I understood you rightly, that supply of 10 million gallons and also the supply which the Chelsea Company would furnish you with in order to pass that to the East London Company will require an additional main?—They will require a larger connexion than at present exists between the Southwark Company and the East London Company.

15,562. (*Chairman.*) You mean the connexion through the subway?—The connexion through the subway because that is only a 20-inch main, and that with the pressure they will have on it will only carry, I think, 6 million gallons per day. If we were to send 10 million gallons, we must have the channel to send the 10 millions through.

15,563. (*Major-General Scott.*) Will the main have to extend from Nunhead?—It would be better if the main were to extend to Nunhead, because we should then get the pressure direct. However, that is an engineering question which you know there is no difficulty in meeting.

15,564. It is a question of time, of course?—But there is ample time to do that between now and next May or June—ample time.

15,565. (*Mr. De Bock Porter.*) Your figures are based on the assumption that you retain the Battersea Works I presume?—No, not exactly on that assumption, because the Battersea Works are now doing a certain amount of filtering, but we have filters at Hampton in such an advanced state, and we have other filters and plans prepared which we shall be proceeding with immediately that we shall be able to filter the whole of

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this quantity of water at Hampton and do without Battersea. That is what I am pledged to do. I pledged myself to do that in Parliament years ago. That is what I have been working for.

15,566. Then you think it would be unnecessary to retain the Battersea Works?—We would not want the Battersea Works after the next couple of years or so.

15,567. (*Chairman.*) Then your evidence suggests that this Battersea Scheme that has been laid before us by Mr. Collins is an unnecessary expense?—The Battersea Scheme as laid before you, is a scheme admirable and necessary, if we are to satisfy the public outcry for coupling up the companies; but as I have said from the very first, although it may be a very good insurance, yet it will seldom or never be wanted, and as events go along they will make the possibility of it being wanted far more remote, because the other companies who find themselves deficient will do as we have done, and bring themselves up quite to the present requirements.

15,568. Do I understand your case, that the need at present applies to the East London only?—As I understand it I know of no other company which is in distress or likely to be.

15,569. And you say you could meet the needs of the East London Company by a slight expenditure on the enlargement of the mains, and a connexion or two here and there?—Well, I would not personally, perhaps, use the word "slight," because that expression is liable to various interpretations, but I would say at an expense of not any very serious import.

15,570. And at an expenditure much less than that of the Battersea Scheme?—Yes.

15,571. The advantage of the Battersea Scheme being only that it connects together other companies which have hitherto not wanted assistance and not likely to want assistance?—From what I know, I do not think they are likely to want assistance.

15,572. (*Mr. Mellor.*) Can you do this without an Act of Parliament?—I do not think there is any doubt at all about that. I think that the present position which the companies are in is not the position which some people try to make them out to be in. The companies have taken every precaution, and I think this year has proved that the companies have well tiled themselves in, and prepared themselves for any emergency.

15,573. (*Chairman.*) At any rate the expense of what you have suggested—improving the connections with the East London—would be far less than that of the Battersea Scheme?—Oh yes. I should put down the cost of improving the connexions with the East London, and of connecting ourselves with the Chelsea and the Kent, at a matter of 20,000*l.* or 30,000*l.*

15,574. (*Major-General Scott.*) Do you propose to proceed immediately to provide yourselves with filters which will enable you to filter this large quantity of water which you propose to transfer to the East London Company for four or five years say, and which will not be necessary for your own company for some time?—You are perfectly aware of the large filters we are carrying out at Hampton now, the large scheme of filters. Those filters, when completed, will be sufficient to enable us to do without Battersea. The filters we have at present, plus Battersea, put us in a position to give this extra filtered water to the East London. Therefore when we have an equivalent for Battersea in filters at Hampton, Hampton alone will filter enough to enable us to give this quantity to the East London.

15,575. (*Chairman.*) What legal right have you at this moment to be selling water to the East London—that is to another company?—I believe, under our Acts, I cannot possibly presume to give an interpretation of Acts of Parliament, but I know perfectly well we have power to make agreements for the sale of water with anybody. Your Lordship has had before you what we call No. 1 Scheme. I would not suggest that that scheme should be put on one side. No. 1 Scheme is a very good scheme as far as it goes. No. 2 Scheme is better, decidedly better, if you are to have what we call a continuous and perpetual insurance. But the question is whether No. 1 would not be sufficient to meet all emergencies that might arise in the future, after the companies have all got themselves into that position which they ought to be in.

15,576. (*Mr. De Bock Porter.*) But with the slight expenditure which you suggest, do you think that the companies could meet a drought such as that of this year?—I think so.

15,577. Without any difficulty?—I think so—without the slightest difficulty.

15,578. With an expenditure of some 20,000*l.* or 30,000*l.* more?—I think so.

15,579. You do not consider either Scheme No. 1 or Scheme No. 2 really necessary?—Only in the way of insurance, and to satisfy public anxiety if there is any real public anxiety at all, which I very much doubt; because you know though it is called a drought in the East-end that is not a term which ought to be applied to it at all. There has certainly not been such an ample supply of water in the East-end as there used to be, and there has not been a constant supply. But when we know that 25 gallons per head per day have been pumped into that district, certainly we cannot call that a state of famine. It is not the East London Company which has broken down, it is what I was going to call that ridiculous system—I think I may use that word—of building houses without cisterns. It is the non-provision of storage in the houses which has caused the breakdown, and which has caused this difficulty. The East London would have gone on, and we should never have heard a word about it if it had not been for that, and I cannot myself imagine how any sensible man, when he is dependent upon a water supply—brought in by artificial means—can ever think of putting people to live in a house which has not got storage for at any rate 24 or 48 hours.

15,580. (*Chairman.*) We had pictures from the East-end of the condition of water stored in cisterns which were not attractive?—That is not the fault of the company. That is the fault of the mode of construction of the cistern. It is utterly absurd to say that a cistern cannot be constructed to prevent contamination of water. It can be done easily enough; it can be cleansed and continually kept clean if it is properly constructed. While you construct cisterns with flat bottoms on which dirt can accumulate you will have a sediment. But if you construct them on a slope almost like a champagne bottle, what little sediment gets in will be readily drawn out, and you will have the cistern always clean. Nothing goes into the cistern from the water companies' mains in the way of sediment. It is only what is allowed to blow into them when the lids are off.

15,581. (*Mr. Mellor.*) Do you think you can keep them clean without an efficient filter?—Yes, I think so, if you construct the cisterns in the way I have roughly indicated to you. Then any sediment would gravitate to the bottom. If you have your drawing-off pipe there, then every time you turn on your tap, whatever little sediment there is would go away. There is no difficulty about it. You must make the cisterns—not exactly air-tight, of course, but so that the lids cannot be opened; you must have the lids riveted on, so that people cannot open them. I had my cistern cleaned out once in three months, but I found that when the man went to clean it out, the bottom of the cistern was as bright as before, and it was truly absurd. I find now it is not necessary to clean it out more than once in twelve months, and then he does not find half a tea cupful of sediment; but then the cistern is always shut up.

15,582. (*Sir John Dorington.*) If your connexion is so good at present, why do you think that Scheme No. 2 would satisfy the public opinion better than what is already done?—Because the public do not understand the real condition of things.

15,583. You have already done all that is necessary you think, or nearly all that is necessary?—Not done all, or nearly all, because there is the connexion to be made with the Kent, there is the connexion with the Chelsea, and there is enlarged connexion with the East London to be made, and also there would be some extra mains to be laid through our district to get to our larger mains to get a larger quantity of water through. But all that is practicable and all can be done in a very short time.

15,584. When that is done why should Scheme No. 2 be requisite in order to satisfy public opinion. Ought not public opinion to be satisfied that you have done everything by your scheme that Scheme No. 2 would do?—No.

15,585. (*Chairman.*) Have you connected all the companies in the way Scheme No. 2 does?—No.

15,586. Your existing communication will only help the East London as I understand?—It would help the

East London; out if the time occurred, which is not likely to occur in the next fifty years, that the Southwark should be short of water, because we are well tiled in; but if it did occur that we were short of water and the East London had a lot of water to supply, we could bring it from the East London into our district, and we could bring it by these mains from the West Middlesex and the Grand Junction and the New River through the East London, right round the whole circle into Chelsea if necessary.

15,587. (*Sir John Dorington.*) What advantage would be gained by putting the water to begin with into the Campden Hill Reservoir over your scheme. In Scheme No. 2 the proposal is to lay the main from your works to Campden Hill?—Yes, that Scheme No. 2 is what you may call a complete and perfect scheme to remain in existence as a perpetual thing—as a perpetual insurance. The scheme which I have indicated is good, as long as the companies each have the extra quantity of water which we have at the present moment. The time will come when we shall want all the present water we have powers to take for our own purposes. Well, then, if No. 2 Scheme were established in ten or twenty years hence with power not only to deliver water, but to take more water from the Thames than No. 2 Scheme would give a permanent and perpetual insurance against any scarcity of water on the part of any of the companies. As I have said before, and I repeat it again. I do not believe myself that such a thing ought to be necessary. I believe myself that the drought has caused an unusual state of circumstances, but we must not legislate in a panic, and because we have come upon a drought in this one particular year. 1893 was a very fairly bad drought year, and therefore a very good year to base your calculations upon, and I am quite sure the companies will all be prepared to meet the requirements.

15,588. Scheme No. 2, in fact, entirely depends upon how long the Southwark and Vauxhall has its surplus supply?—Bearing on that point, I may say, I am of opinion that every company ought to be compelled to have sufficient appliances not only to supply the maximum wants of its own district, but at least 3,000,000 gallons per day over. If every company had that the eight companies would have 24,000,000 gallons, and if the companies were only coupled up according to Scheme No. 1, that would always be available for the assistance of any one company. That is the position which I have brought my company into, and I am sure it is a position which all the companies wish to put themselves in. But you have no idea of the difficulty we have had in getting these powers. I have had to prove urgency up to the hilt, with the London County Council at my heels blocking me and obstructing me in every possible way. I have had to prove urgency up to the very hilt for every gallon of water I have got instead of which I respectfully submit those who have got the responsibility of supplying water ought to be encouraged and helped to do it.

15,589. (*Major-General Scott.*) When you say that every company should have a surplus of 3,000,000, you mean that the companies should possess means capable of conveying that surplus all over its district, I presume?—No, I mean this, if for instance the maximum requirements of a company are 40,000,000 gallons a day that company ought to have means at its disposal of manufacturing 43,000,000 gallons a day.

15,590. (*Sir John Dorington.*) Pumps and filters?—Pumps and filters, certainly.

15,591. (*Major-General Scott.*) Yes, and mains to convey it?—And mains to convey it.

15,592. Throughout their district?—Not necessarily throughout their district. There Scheme No. 2 would come in very advantageously, because then if any company were short, all the companies would be required to send this extra 3,000,000 gallons into the central reservoir under Scheme No. 2, and from the central reservoir it would be sent to any company that wanted it.

15,593. You simply reserve this 3,000,000 for occasional use?—3,000,000 beyond the requirements of my own company, I ought to have, and with the other seven companies that would make 24,000,000 gallons which would be available to send in to the central station such as is intended by Scheme No. 2; from which station it could be distributed to all the companies, or to any company that wanted it.

15,594. But then it is your opinion that such a scheme as Scheme No. 2 would never be used, or would hardly

ever be used?—It would only be necessary under those circumstances. As I said before, I am of opinion it would never be used or scarcely ever be used. But still that is no reason why each company should not have that quantity of water to spare beyond its own requirements.

15,595. Reverting to No. 1 Scheme for a moment, I see that your daily supply in September was something over 36,000,000 gallons a day?—With all submission, I asked the engineer yesterday, and he told me it was 32,000,000.

15,596. I think the return made was 36,331,552 gallons in the month of September?—I have no doubt you are correct, because you have got the figure before you.

15,597. What will your filter area be, assuming that you abandon Battersea, and complete your filters at Hampton?—22 acres.

15,598. (*Major-General Scott.*) And through that area you would propose to filter your own supply, plus 10,000,000 for the East London during the next four or five years; is that so?—Yes.

15,599. That would be 46,000,000 through 21 acres of filters?—Through 22 acres of filters. But then you see that would never be; at least that is only in an emergency, and it would be a time of the year, as you very well know, when the water is filtered very much more easily than it is in the winter time.

15,600. I take your answer on the subject?—Thank you.

15,600a. (*Sir John Dorington.*) If you go in for this large supply, will not you want powers of sale. You guarded yourself yesterday by saying you were not exceeding your powers, because you dealt with other sources of supply besides the Thames?—That is so. See 15,189

15,601. But if you are supplying this larger quantity of water, would you feel quite safe that you were only supplying water other than the Thames water?—No, at present we should not. But then, one of the very first things which I think most of us agree in is, that if this system of inter-communication is to be made efficient, we must get rid of those restrictions which have been put upon the companies as regards inter-sale.

15,602. I am rather putting this question with a view of our possible report as to whether you have got all the powers that you now require or whether you would want a repeal of that clause which prohibits the inter-sale of water coming from the Thames?—Yes, we should want a repeal of that clause.

15,603. You would?—Certainly; all the water that we have supplied to the East London has been withdrawn from other sources than the Thames. We have not taken any Thames water for them.

15,604. I am not questioning your present legality; I am only asking this with a view to what may be necessary to be done in the future?—Then, as regards the future, we are sinking more wells, and we have other wells in prospect, and I have not the slightest doubt in my own mind, that as the time goes along we shall have ample water without touching the Thames water for such purposes as this. Nevertheless, it is necessary and desirable to repeal those clauses; they are a restriction and a difficulty which I am only surprised that Parliament ever permitted to creep in.

15,605. (*Chairman.*) Any scheme of this sort is a means of propping up and helping a company that has somewhat failed in its obligations to the public?—Well a circumstance has caused that company to give a less abundant supply than they did, that is the drought.

15,606. But you can provide against drought by storage?—That is what I believe they are doing as rapidly as they possibly can.

15,607. They have not done it in time?—No, just so. But then further than that, if you will excuse me interrupting your Lordship, the idea of storage is comparatively a new idea. When I first came into the water world, nobody had any idea of storage reservoirs. They arose out of Lord Balfour's admirable Report, and ever since that Report of Lord Balfour's Commission, we have all been striving very hard indeed to carry out its requirements. We have powers to construct, I think, about 1,800 million gallons of storage in carrying out the Staines Reservoirs Scheme, though that is not at Staines.

15,608. Is not there a danger in any of those inter-communication schemes that a company which is not quite doing all that it ought to do in order to fulfil its

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obligations will rely upon the assurance of other companies and on inter-communication supply, and so it may never provide adequately for itself?—Then if they did that under that clause which you discussed so much this morning with Mr. Hollams, I would take good care they paid a very heavy penalty when they did come for water.

15,609. I want to avoid engineering questions as much as I can. But you suggest that already there are existing connexions between a number of the companies?—Yes, it is so. I daresay your Lordship will have noticed that we have been connected with the West Middlesex and the Grand Junction Companies for 44 years as regards unfiltered water, and during the whole of that time the connexions have never been used but once.

15,610. On what occasion were they used?—When the 15-inch connexion with the Grand Junction and Southwark Companies was used for about 24 hours. Some circumstances occurred then, but I cannot tell you what those circumstances were. Perhaps Mr. Restler recollects.

15,611. (*Mr. Restler.*) There was an additional engine being erected at our works at Hampton, and during the time of the connexion with the new pumps, the whole station had to be stopped, and we had a temporary supply during the 24 hours from the Grand Junction.

15,612. (*Chairman.*) That is an illustration of the sort of need for which Scheme No. 2 would provide a remedy?—Yes, something of that sort. For instance, supposing an important engine broke down, or an important supply main burst and the Company was incapacitated for a time, say 12 hours or 24 hours from supplying water, it would be a grand thing to have this connexion. It would be brought in, and then it would be a grand thing to have Scheme No. 2; because that is a much more perfect scheme than anything which has been submitted to your Lordship. It would be very expensive, but it would be there. It would be paying, no doubt, a very big price for an insurance which is likely to be wanted very seldom.

15,613. (*Major-General Scott.*) Generally speaking, would not a mere connexion serve the purpose of a short supply like that?—I think it would.

15,614. It would not be necessary to have an elaborate scheme like No. 2?—I recollect a case some years ago which occurred in the Lambeth district. They had a very important main burst, and the houses they were supplying in that district would have been without water, but we happened to have pipes near and we immediately put on stand-pipes all over that part of the district, and the people got their water.

15,615. Without going into each of these connexions which are laid down in Scheme No. 1, I will just ask you this. I see the Lambeth and yourselves can have connexions of mains?—Yes.

15,616. Assuming the connexion to be made, the question of whether it could be utilised would depend in the first place upon whether the Companies had anything to spare which they could transfer, would it not. That would be one consideration?—Yes.

15,617. And another would be the question of the varying pressures between the two mains?—Yes.

15,618. In fact, if you opened a connexion without studying the pressures you might get the very reverse of what you want?—No engineer would do such a thing.

15,619. Unless the pressure answers the purpose that you had in view you could not use the connexion?—Certainly not, and the connexion would not be made. No engineer would make such a connexion liable to such a contingency. His first duty would be to consider all questions of pressure and what he could do with the water when he got the connexion made.

15,620. It may be favourable enough for a transfer from one company to another, and not backward. It might be made for a transfer from Company A. to Company B., while it would not serve to transfer from Company B. to Company A.?—I will not discuss engineering questions with you, because, perhaps, you might tell me that you will take my answer. But I am quite satisfied, and I am well advised by our engineers that no such difficulties would arise in that case. The connexions can be made so that it would be satisfactory for an interchange of water.

15,621. (*Chairman.*) You want an interchange of filtered water?—I am always dealing with filtered

water when we are speaking about this question, because it is no use talking about unfiltered water. Because you want water fit for a man to drink. Therefore it must be manufactured water.

15,622. I understand you to suggest a different scheme of intercommunication from what the engineers have suggested under Scheme No. 1?—Mine is hardly worthy of the name of a scheme. I have only been attempting to point out to your Lordship what is the present condition of things, and what can be done for immediate purposes. Both Scheme No. 1 and Scheme No. 2 are exceedingly valuable; I would not discard from consideration either 1 or 2. I am quite sure I may say, on behalf of all the companies, that we mean business, and that whatever scheme of coupling up Parliament thinks is the best scheme, we are prepared to carry out.

15,623. Do you agree with the view expressed by the engineers that there should be a faculty, at least, subject to the approval of the Local Government Board, of taking more water from the Thames?—Yes; that can be done in one or two ways. Either Parliament should give the Company power to draw a certain quantity in emergency, or the Local Government Board, as explained in the arrangement which Mr. Hollams has so well explained to your Lordship, could be the authority to give permission under certain conditions. I do not care which way it is, but it must be done. It should be done one way or the other. In the way that I have explained to your Lordship, it would be done by each company being required at least to have three million gallons in reserve. Then each company does its own work, and provides an insurance fund for the benefit of all.

15,624. Then do you suggest to us that that would be a proper measure of control to apply to all the Metropolitan water companies—that is, to require them to have works sufficient to manufacture, and have ready for distribution, a surplus quantity of three million gallons beyond what their district requires?—I do. In the interests of all the companies I am sure we should wish it, because we do not want to have such a thing as we have had this summer occur again.

15,625. You wish the short remainder of your life to be peaceful?—Well, if it is to be short, we should like it to be peaceful. I have had no feather bed for 22 years. I do not know whether your Lordship calls to mind that there was an instruction at the instance of the London County Council; and this was the instruction sent by the House of Commons to the Committee. "That it be an instruction to the Committee not to confer additional powers except so far as the same may be proved to the satisfaction of the Committee to be required for works or for the acquisition of land, the construction or acquisition of which cannot be postponed without detriment to the interests of the public; and to insert in any Bill authorising the creation of further capital, provisions which shall prohibit the application of such capital to any purpose other than the construction of the works, or the acquisition of the land for which it is authorised in the Bill to be raised, or the expenses of the Bill."

15,626. Oh yes, we have had that before us more than once?—You would think it was directed against men who were going to do something criminal, instead of against men who were supplying the metropolis with water.

15,627. No, Sir Henry, that is hardly a fair way of putting it. It was an instruction to prevent additional powers granted while purchase was in the air from making purchase more onerous?—My Lord, I will take your reading of it.

(*Mr. H. L. Cripps.*) Sir Henry likes to ascribe everything to the London County Council, but I do not think he must ascribe that instruction. That was done by the Government.

(*Witness.*) It was done at the instance of the London County Council.

(*Mr. Pember.*) Moved by Mr. Stuart.

(*Witness.*) Moved by Mr. Stuart, yes; and I know it was one of those things which caused us to have to prove urgency up to the very hilt for every pound we wanted, and for every gallon of water we wanted.

15,628. (*Mr. Pember.*) Whatever may have been the origin of it, it cannot be a matter of doubt that it has prevented the companies looking very far ahead for the last 15 years?—We did not dare put in our Bills all we knew we wanted. We had to get a little at a time and go on afterwards and get more.

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(Chairman.) No doubt the present position has been very embarrassing all round; that is very clear.

15,629. (Sir George Bruce.) When you say you wish to have power to draw more water out of the Thames, do you mean that in relation to Teddington Weir you are to be allowed to draw from the Thames when it comes to be less than 200 million gallons?—I think so.

15,630. Or do you mean that you are to be allowed to draw more in any one day, say than 24 million or whatever it may be, than you are at present allowed to do?—If emergency requires it. And if there is one thing which has been proved by the drought of this year of more importance than another it is that that reserve of 200 million gallons over Teddington Weir is utterly useless and unnecessary; because it has been proved this year when it has been down, I think, as his Lordship said yesterday, to 56 million gallons some days over Teddington Weir.

15,631. (Chairman.) To 77?—And we have had no calamity happening. We have heard nothing happening in the navigation below Richmond. Perhaps a little barge may have got aground for half an hour at very low ebb tide, or a steamer going up the Thames; but what is that compared with the necessity of providing water for London. The drought has proved beyond anything that we can possibly want, that that reservation of 200 million gallons at Teddington Weir is, as I have said all along, utterly unnecessary. If it is necessary it could be done in a far better way than by taking this good water. If it is necessary to have this flush, make a tidal reservoir down at Teddington Locks and let that go out at low tide. Or you have a half tide weir at Richmond, make that a whole tide weir and keep half the water till low tide, and then let it go down. You do not want this magnificent Thames water that we require in London for drinking purposes for that, I say it is not wanted it all. If a little barge gets aground it is only once in 24 hours, because there are two ebb tides in the 24 hours, and one of them is in the night time, so then it does not matter; suppose a barge which is too heavily laden does get aground for half an hour or an hour it is a mere bagatelle; compared with the necessity of supplying London with water, it is as nothing.

15,632. Do you propose that there should be no limit to the quantity that the companies can take from the Thames?—I propose, my Lord, that as long as the Thames will supply the water and London wants it, the companies ought to be able to take it.

15,633. Then there is to be no limit; the companies may take it all?—No, certainly not, my Lord.

15,634. Then there must be some limit over Teddington Weir?—I think there should be a limit to the quantity the companies might take; but I think myself that making them subject to 200 million gallons always going over Teddington Weir is quite unnecessary, if I may venture to say so.

15,635. What do you say is the proper amount to fix to go over Teddington Weir?—As far as I am concerned no quantity is necessary to be fixed, because when there is a smaller quantity going over Teddington Weir it is so very few days in the year, and the quantity that goes over Teddington Weir in times of flood is so enormous, that it does all the scouring that is necessary in the Thames. But at the same time I think it is quite reasonable that Parliament should keep in its own hands the quantity of water the companies should take out of the Thames subject to emergency.

15,636. (Mr. Pember.) And subject to storage?—And subject to storage certainly. The water companies are fully prepared to do their duty. They will provide all storage that is necessary, and provide London with all the water that is necessary. There is no difficulty at all about it. As regards the position of the Southwark and Vauxhall Water Company questions were asked by Mr. Balfour Browne yesterday as regards our power of taking water from the Thames. Those questions only went a very small way towards getting out the real facts. I daresay your Lordship has the impression that we are limited to 45 million gallons a day from the Thames. That was the figure that was brought out; but the case is not so. We can take 24½ million gallons from the Thames without any conditions whatever; we can take another 20½ million gallons from the Thames under certain conditions—that is to say, when the quantity of water flowing over Penton Hook Weir is not less than 250 million gallons; 20½ plus 24½ makes 45. But then

we are not limited to 45 million gallons a day; Parliament saw the necessity of making that the average, therefore we are permitted to take such a quantity of water from the Thames, which during a period of six months shall not exceed 45 millions a day. We can take 90 million gallons one day if we take none the next day, as long as we do not exceed an average of 45 million gallons a day. Then there is another thing Parliament enacted. Seeing the importance of giving us power to fill these reservoirs, they gave us power under certain conditions to take as much as 100 million gallons a day from the Thames.

15,637. (Mr. Pope.) That is the maximum, I think. You cannot raise your average by going beyond 100 million gallons a day?—No, quite right, Mr. Pope, that is the position in which we stand; it is an average. We must not take more water from the Thames than in an average of six months will come to more than 45 million gallons a day; that is the way we stand.

15,638. Provided on no one day your amount is to exceed a certain amount. I forget what it is?—In no one day are we to exceed 100 millions—that is the position of the company—and it is a very different position from what the questions of Mr. Browne were calculated to convey.

15,639. (Chairman.) Then I gather that your company has done more to provide for the future and for emergencies in the way of storage, and in the way of filter beds and plant generally, than the other companies?—I can hardly go so far as that, because you know three of the companies have got permission to make these large reservoirs at Staines. They have taken steps to put themselves in as good a position as we are. The Lambeth Company are now largely extending their storage reservoirs at Molesey, and consequently they are taking steps. The East London have powers to construct a very large quantity of storage reservoirs, so that all the companies are taking steps to bring themselves up into such a position as I am happy to say my company is in at the present day. There is another thing as regards our powers of taking water from the Thames, which I had forgotten. Parliament knowing that we might want this water did not make it contingent that we should wait till we had got those extra storage reservoirs constructed before we could take more water from the Thames. There is a special clause in our Act which says that, until they are constructed, and notwithstanding the flow at Penton Hook being less than 250 million gallons, we may take extra water from the Thames. Parliament saw the necessity for these arrangements.

15,640. It is a little out of our present subject, but you have a suggestion for a kind of central committee which should supervise the action of the different water companies, have you not?—Yes, I have an opinion that a committee formed of representatives of the water companies would not be at all a bad thing, and it might have power to supervise, and it might have those powers which, by the scheme agreed to by the joint chairmen, it has been proposed should be conferred upon the Local Government Board. If Parliament does not like to give the Local Government Board those powers, or if the Local Government Board do not care to be troubled with those powers, then I think a committee which would federate the companies for general purposes would be exceedingly useful.

15,641. To what extent would you allow them to control the operations of each company?—We will deal with the question before us if your Lordship pleases. I think a federated committee like that should have power to see that every company was bringing its works into such a condition that it could have the surplus I have spoken of.

15,642. Then you would give the Committee power to order a particular company to execute certain works?—I would for that purpose. If the committee and the joint chairmen thought that one of the federated companies was not doing its duty and was going to depend on others for helping them out of a difficulty, if they got into one, then, I say, it would be a good thing for the Committee to have power to say to this company: "We will not stand this; in the interests of all the companies we require you to do certain works, to bring yourselves up to date—to put yourselves shoulder to shoulder with the other companies"—I think it would be a very good thing.

15,643. (Sir John Dorington.) Supposing the Committee came to the conclusion that it was desirable to go to Wales, would you allow them to order the

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companies to carry it out?—If the Committee decided, and if Parliament decided, that it was necessary to go further afield for the supply than the River Thames, the London Water Companies would be quite prepared to fall in with the requirements of Parliament, and could do it.

15,644. (*Chairman.*) Now you are drawing in Parliament. I thought your Committee was to act by itself?—In small matters; but such an important subject could not be dealt with certainly without Parliament.

15,645. (*Sir John Dorington.*) Would the Committee have power to order the several companies to join together to go to Parliament to get power to do this work?—I think so. It would be necessary to go to Parliament.

15,646. Of course, it would be necessary to go to Parliament?—To do a work like that you would want a large amount of capital, and there would be many financial considerations which would have to be considered, which Parliament would have to be appealed to to settle, and to allocate it, and to see how it was to be paid for.

15,647. I wanted to see how far you would go in giving this Committee power to order the companies. Would you give this Committee power to order the companies altogether to go further afield for water, even if it was to Wales, and to promote a Bill?—I think it would be a large power to place in the hands of such a committee.

15,648. I am only testing your opinion?—Quite so.

15,649. (*Chairman.*) Would you give them power, for instance, to order a company to apply to Parliament for a Bill for extra storage reservoirs?—I would give power to such a committee to decide whether it was necessary to go to Parliament for such a big work as the honourable member has stated. I would give them power to do that, because they would be representing the whole of the joint companies, and they would be a very excellent authority to have such a power in their hands.

15,650. Now you are answering about Wales?—Yes, or anywhere else.

15,651. Or any other lesser work?—Yes.

15,652. Then you would entrust the Committee with the responsibility of seeing that every company was making due provision for the future?—I would certainly. If they found a company not making sufficient storage reservoirs I would give them power to call upon the company to do it.

15,653. At once?—Yes, at once.

15,654. (*Mr. A. De Bock Porter.*) How would you enforce your requirements?—That would be a matter which would have to be decided by Parliament. But it is no use having a committee that will not have power to enforce its requirements. They must have power to enforce their requirements.

15,655. (*Chairman.*) Just let us follow it out for a moment. Your committee meet, and say the East London Company have not got storage enough. We require them to go to Parliament next year for a Bill to establish so many acres of storage reservoirs. Well, the East London are recalcitrant, and do not like this order. What chances would the Bill, promoted by a reluctant company, have, of passing?—I think that would be met by giving the supervising committee some powers to enable them to take steps which would compel their decision to be respected.

15,656. (*Major-General Scott.*) Do you consider that the companies are under an obligation to go to a distant source, if necessary. Do you consider that under their statutory obligations they are under an obligation to go to Wales, if necessary?—That is a question which rather touches upon the legal interpretation of Acts of Parliament, and I do not think I should care to give an opinion upon that. What I do feel is this, that the companies are under an obligation to supply their districts with water.

15,657. (*Chairman.*) Yes, but from what source; is it from the source that the Statute has enabled them to tap or from some other source that they may discover for themselves?—We have the Thames source, we have the Lea source, and we have wells' source. All these are within our control and within our grasp at the present moment. If that failed, and possibly at the end of 200 years or 300 years the Thames might fail, then, I think, would be the time to consider where they

would go to for a further supply of water. I shall no doubt have to appear before your Lordship on many other matters upon which evidence has to be given, and I shall be prepared then more fully to enter into such questions as that. I have confined myself rather to-day to meeting your special requirements as to coupling up.

15,658. Quite so; I am very much obliged to you. Have you ever considered Mr. Banbury's evidence before the Commission?—Do you mean Mr. Banbury, the chairman of the East London Company?

15,659. No, Mr. Banbury, a member of Parliament and a member of the Stock Exchange?—No, I have not. I am not acquainted with it at any rate. I have heard of it, but I am not acquainted with it specially. The only impression upon my mind when I did read it or looked at it was that he did not quite understand the question.

Cross-examined by Mr. FREEMAN.

15,660. I just want to direct your attention to one paragraph in the suggested agreement which was put forward by the Chairmen of the Company. It is No. 8: "Any company taking water from another company to pay for such water to the company supplying it at a rate to be agreed upon or fixed by arbitration." That would of course not necessarily mean that the company supplying the water was to only charge cost price to the company taking it?—No, it means what it says.

15,661. Exactly?—That they are to settle between themselves what is to be paid, and if they do not agree it is to be settled by an arbitrator.

15,662. The reason I put this to you is this: At the present time yours is the company which has the largest surplus available for supply to any other company?—Yes.

15,663. Supposing the East London require to take, say 10 million gallons from you, you, I suppose, would expect to be paid a profit price upon that, would you not?—The price we have fixed at present is cost price. I looked upon it as far more important to take care that the public is supplied with water than any little question of getting a pound or two more profit.

15,664. What I am rather putting to you is this: Supposing your company ultimately to be acquired by any public authority, the power to sell that water at a price to be fixed by arbitration would be a valuable asset in your hand?—Well, if it was a power to sell at cost price it would not increase our profit.

15,665. But there is nothing here to limit it to cost price. It is a matter for the arbitrator failing agreement?—Entirely.

15,666. It has been put forward that the East London Company is practically the only company which at present require such assistance. Do you know the circumstances of the Lambeth Company?—I have a slight idea of their circumstances, yes. I do not know them sufficiently well to give any opinion about the Lambeth Company.

15,667. I will just put this figure to you and found a question upon it. The right of the Lambeth Company to draw upon the Thames is 24½ million gallons, is it not?—I believe that is the figure.

15,668. And do you know that they have been drawing as much as close upon 32 millions?—I do not know it, but you have got the papers there which tell you.

15,669. I am quoting from the official report?—Very well.

15,670. Therefore the Lambeth Company are in this position that either they would be drawing 8 millions beyond their statutory powers or they would have to apply to some other company to assist them in their difficulty?—You will excuse me, Mr. Freeman, but you will get those answers more correctly and more usefully from the engineer of the Lambeth Company than you can from me. I do not know what other sources of supply the Lambeth Company have besides what they take from the Thames.

15,671. You would know this, at any rate, that your company are in a position to be able to supply the Lambeth Company if the Lambeth Company require assistance?—Yes, we should be able to help them.

15,672. You have the water and you have the means of communicating with the Lambeth Company?—Yes.

15,673. And your district and the Lambeth district, as we have been told over and over again, overlap?—Yes.

15,674. Therefore this state of things might occur, might it not, that you could be supplying to the Lambeth Company say, this 8 millions which they want in excess, and they would then be distributing it in part of the district which is also the district of your own company?—Yes.

15,675. So that you could be taking water from the Thames, handing it over to the Lambeth Company who would supply it at higher rates than if you supplied the district yourself?—During such a short time as the emergency exists that must be the case.

15,676. But you are not in a position to say how long that emergency could exist with the Lambeth Company?—We know it could not exist very long, because if they are in that state, they would have to go to Parliament to get more powers.

15,677. I think the only other question I wanted to ask you was this. The scheme which you have been just detailing—that of a central committee and all their powers—that scheme I understand to be your own individual suggestion?—Most assuredly not.

15,678. Is it a suggestion on behalf of all the companies?—You are speaking of No. 2 scheme now, I suppose?

15,679. No, I am speaking of your suggestion to have a central committee representing all the companies with power to coerce a company to carry out works?—That is entirely my own.

15,680. And it has not been a matter in consultation with the other companies?—No, certainly not.

15,681. Does it not occur to you that such a scheme, if carried out, would be practically, although by another name, amalgamation of all the companies?—No. An amalgamation I look upon as almost an impossibility. It would be a federation of the companies which is perfectly practicable and easy.

15,682. Federation with the absolute powers of the committee such as you have told us?—Federation is a practical thing and would be beneficial, but amalgamation is almost impracticable on account of the many difficult questions which would arise.

15,683. In other words, you say it would be federation not amalgamation?—Yes.

15,684. That is federation without restrictions in order to avoid amalgamation with reduction of rates?—No. You may put that interpretation upon it if you like, but I do not put that interpretation upon it, and do not mean anything of the sort.

15,685. (*Chairman.*) I suppose the difficulty of amalgamation is the difficulty of rates, is it not?—And many other difficulties as well. There would be so many things to consider—the different interests of the different companies with regard to everything which they have to do in connection with their business, and the differences in their rates, and the differences in their Parliamentary powers, and obligations. There would be so many questions which would arise in amalgamation, that I am afraid it would be exceedingly difficult, if not impracticable. If you take federation and leave each company to work out its own hand, then you get over all these difficulties, and you can get all the advantages to the general public which federation would give.

15,685A. (*Mr. Freeman.*) Would your Lordship allow me to correct one error. I have the Parliamentary Reports now. I think it is an error of my friend Mr. Pember. The instruction which was referred to by Sir Henry Knight, I think was moved by Mr. Chaplin, not by Mr. Stuart, as suggested.

(*Witness.*) Who do you say it was moved by?

(*Mr. Freeman.*) Mr. Chaplin.

(*Witness.*) I beg your pardon.

(*Mr. Freeman.*) It is as well to have it correct.

(*Mr. Pember.*) That instruction I think, was moved for in more than one year. Mr. Chaplin may have moved for it in one year, and Mr. Stuart in another.

(*Mr. Freeman.*) There is no record of Mr. Stuart's name.

(*Witness.*) I should like it to be perfectly clear as to what I mean upon this question of coupling-up. Whether it is left in the way in which I have indicated, it exists at the present moment or can be made to exist in the course of a month or two, or whether No. 1 Scheme is adopted, or whether No. 2 Scheme is adopted the companies, I am sure, are quite prepared to carry out the requirements of Parliament in any way that Parliament thinks best.

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Recalled,
Q. 24,567.

The Witness withdrew.

[After a short adjournment.]

Mr. WALTER HUNTER called and examined.

Mr. W.
Hunter.

15,686. (*Chairman.*) You are a member of the Institution of Civil Engineers?—I am.

15,687. And a member of the Institution of Mechanical Engineers?—Yes.

15,688. You are engineering director of the Grand Junction Waterworks Company?—Yes.

15,689. And joint engineer to the Staines Reservoir Committee?—Yes.

15,690. You also have the privilege, I believe, of having been a member of the London County Council?—Yes.

15,691. Now, have you considered some one or more of the schemes that have been laid before us of inter-communication?—Yes, I have considered both of them.

15,692. Scheme No. 1 and Scheme No. 2, as we have called them?—Yes.

15,693. Which of these shall we direct our attention to?—I think No. 2. No. 2 appears to me to be a better scheme than No. 1.

15,694. It has the disadvantage of being more expensive, has it not?—Slightly more expensive, but not really, if looked at in the view that I shall put before your Lordship.

15,695. Then you confine yourself to Scheme No. 2?—Yes.

15,696. It is a feasible scheme, of course, otherwise you would not recommend it as a scheme?—Quite so. I think it is a good scheme, because it joins the works of the companies without in any way interfering with internal distribution.

15,697. On the other hand, do you consider it a necessary scheme?—It is necessary under the peculiar circumstances of this year. We consider it would be very inadvisable and very detrimental to the public interest that any company should break down next year under any circumstances whatever.

15,698. On the other hand, do you contemplate a breakdown of any company except the East London?—No, I do not, and I do not contemplate any breakdown of the East London.

15,699. I thought I had framed my question so as to exclude that?—I beg your pardon.

15,700. You do not contemplate any except that, and you do not contemplate even that?—No.

15,701. Sir Henry Knight has thrown out a suggestion to us which I should like your opinion upon, if you have one, namely, that the existing communications of the East London Company, somewhat enlarged and improved, would amply suffice to meet that possible breakdown?—I think, probably, that could be done.

15,702. That, of course, would be much less expensive, and would require much less time for execution than the larger scheme that you are going to speak about?—That is so, but the companies have felt that they have been open to a good deal of criticism from the public in regard to the fact that they are unable, or have been unable hitherto, to render that assistance from one to the other which the public thinks it has a right to expect. The companies are very anxious to disabuse the public of any such idea. The companies are ready to do anything that is necessary for ensuring the supply of any district of the metropolis.

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15,703. You think that the more modest scheme of Sir Henry Knight would not satisfy the views of what you may call the public?—I think it is possible that it might not, but perhaps if the whole question is looked into, as it will be looked into before your Commission, and if you come to a certain resolution in regard to it, that may satisfy the public mind, as any statement given by the companies alone could not possibly do.

15,704. At present it is a statement only of Sir Henry Knight. I do not know whether you, as an engineer, would endorse that statement. Would the scheme shadowed forth by Sir Henry Knight, in your view, be sufficient to meet any probable emergency?—Unfortunately, I was not in the room when Sir Henry Knight gave his evidence.

15,705. It was practically the enlargement and improvement of the existing means of communication with the East London?—I have no doubt but that a scheme of that sort would make the East London safe next year, because, after all, they are only under a temporary disability, owing to the failure of the Lea, which is due to a drought which is absolutely unprecedented, at any rate within any records that we have had access to; and I have no doubt that with the works which they now propose they will soon be in as good a position as any other company in London.

15,706. (*Sir John Dorington.*) Not within the next 12 months?—No, that is the difficulty that we are endeavouring to meet by this scheme, or by any other scheme which the Commission may think suitable and sufficient.

15,707. (*Major-General Scott.*) I think you must devise a scheme or schemes, or a scheme must be devised to provide a supply for the next four or five years—I should think so?—No doubt, as a matter of assurance, it would be desirable.

15,708. I mean with regard to the East London Company, subject to what the engineer may say, I presume you would estimate that it would take him several years to complete any large scheme of reservoirs that he might bring forward; is not that your opinion?—Yes, that is so.

15,709. Therefore you must not merely estimate for the supply for next year, but for something beyond that?—Quite so; but I think that any supply to be of real use should be in time for use next summer.

15,710. Quite so.

15,711. (*Chairman.*) It is obvious that Sir Henry Knight's improvement of the existing communications could be made by next summer?—I presume so.

15,712. Do you think Scheme No. 2, as we have called it, could also be ready by next summer?—Yes, I think that Scheme No. 2 could be ready by next summer, if we had such an assurance given to us as would justify us in putting the work in hand at once. For instance, I suggest that if your Commission is satisfied as to the necessity of the works, and would report in that sense to the Local Government Board, the Government might undertake to carry through a Bill, as a public Bill, giving the necessary powers immediately upon the opening of Parliament. If such an assurance were given, the companies could at once commence the necessary works, and have them ready for next summer. That is, in my view, the practical way in which the difficulty could be met.

15,713. This Scheme No. 2, as far as I have been able to understand it, enables the filtered water ready for delivery to be handed over almost from one company to any other company?—That is so.

15,714. Would it be useful and desirable, whether purchase of the companies takes place or not?—I think so. The same mains would be used for the same purpose. There would be the same necessity, and the same user of the mains.

15,715. You mean it would not be waste of money therefore, even in the event of purchase taking place within a reasonable time?—I think not, because it would guard against any possible breakdown in any district in the Metropolis.

15,716. Can you give us a more definite idea of the cost of the scheme than we have had hitherto?—I agree as to the sufficiency of the estimate of 255,000*l.* for mains and connections. I further understand that the Southwark and Vauxhall Company are willing to allow the associated companies to have the use of their Battersea works and of part of the 36-inch main from Hampton

for a few years at a rental. If the works be taken at 9,000*l.* a year, five years' rental amounts to 45,000*l.* Under the scheme, about one-third of the Campden Hill works of the Grand Junction Company would similarly have to be rented which would cost, subject to arbitration (I am only putting forward now tentative figures you will understand) a further addition of 1,200*l.* per annum, or a total of 6,000*l.* for five years. The total expense of the scheme would therefore be for mains, &c. 255,000*l.* Five years' rental of the Battersea works would be, say, 45,000*l.*, that is, taking it at 300,000*l.* at 3 per cent., 9,000*l.*, and five times 9,000*l.* is 45,000*l.* There would be five years' rental of half the 36-inch main from Hampton to Battersea. Mr. Restler gave the figure at 120,000*l.*, one-half of which would be 60,000*l.*, which at 3 per cent. would be 1,800*l.* a year, and five years would be 9,000*l.* Then five years' rental of the Campden Hill works would be about 6,000*l.*, making a total of 315,000*l.*

15,717. That expense, therefore, is for five years only, but if the system is to be permanent, that expense would be increased?—If the Battersea filtering area were done away with, the Battersea area retained, or a small portion of the Battersea area retained, with a small reservoir into which filtered water could be delivered, either from Hampton or elsewhere, and sufficient engine-power left there, that could be a permanent centre from which all the emergency necessities of the companies could be supplied.

15,718. I mean, that adds something. Your estimate of 315,000*l.* only covers the cost of Scheme No. 2 for five years?—Yes, so far as any other expenditure over that of the mains is concerned.

15,719. (*Mr. De Bock Porter.*) Does it include anything for standing charges?—No.

15,720. (*Chairman.*) But would there not be pumping necessary?—There would be pumping necessary when the water was required by any special company, and that would have to be charged for.

15,721. (*Major-General Scott.*) Into what reservoirs do you pump from Battersea, or do you propose to pump?—We propose to pump into Campden Hill and Claremont Square, the same scheme that was described in detail by Mr. Collins yesterday.

15,722. I have not got it clearly in my mind?—Campden Hill, Claremont Square, New River Head from Campden Hill and Brixton.

15,723. Then, of course, the Southwark and Vauxhall Company have their own mains now, which go from Battersea to Nunhead, which would be available in the future.

15,724. (*Mr. De Bock Porter.*) Have you estimated what the standing charges would be in that scheme?—No, I have not.

15,725. (*Sir George Bruce.*) I suppose the standing charges will only come in lieu of standing charges which would be due to pumping elsewhere by the companies. It will not be additional standing charges?—You cannot have a separate station without having additional charges to some extent, but no doubt there would be a credit to be given in the direction which you suggest.

15,726. (*Major-General Scott.*) The great advantage of the scheme is, that you deliver into reservoirs, and thence the distribution is carried on in the usual way?—In the usual way.

15,727. Without any interference?—Without any interference at all. There would be no difficulty as regards pressures and levels, and that sort of thing.

15,728. (*Mr. De Bock Porter.*) But the supply would be only available for a short time, would it not. Would not the Southwark and Vauxhall Company ultimately require a portion of this 15 million gallons?—Yes, they would. They will eventually in a few years time.

15,729. Then it is only for a limited period that it will be available for this purpose?—Exactly.

15,730. What period. Have you formed any idea?—I do not think I have gone sufficiently into that to give you an answer at the present moment.

15,731. (*Major-General Scott.*) I think you explained that a part of this 36-inch main was to be at the service of this scheme?—Because I understand that Mr. Restler wishes to pump 15 millions through it as at present, to Battersea. He would let us have 10 million gallons, but the other five he would want at the present moment for himself. That is how I understood his evidence.

15,732. (*Chairman.*) You say that the Scheme No. 2 would meet with no difficulties in the way of pressures or communication either way. Do the existing communications between the Southwark and Vauxhall and the East London Companies work in the same manner without any difficulty?—They work without any difficulty. They work very well from the Southwark and Vauxhall to the East London, because their reservoir at Nunhead is situated at a high elevation, and they are supplying in that way, but I do not know how they would work back from the East London to Southwark, I could not say that, I give no opinion upon it, but there might be a difficulty.

15,733. (*Sir John Dorington.*) Supposing they went back from the East London, would it work?—No. 2 Scheme would work, if it were through the Grand Junction to the New River.

15,734. It would work from the Grand Junction to the New River, and so to East London?—Yes, but we have an arrangement by which the East London should deliver to the New River, and the New River to the Grand Junction.

15,735. Supposing we reverse it, and the Grand Junction get into a difficulty?—That is what you were speaking of just now?

15,736. Yes, I was, only I am putting the question directly. Supposing the Grand Junction got into difficulties, and you were using the present connexion of the Southwark and Vauxhall with the East London, would it work backwards that way?—I do not quite follow you for the moment.

15,737. From Campden Hill to the Grand Junction you would be going eastward, would you not?—Yes, to the New River.

15,738. By the present connexion of the subway from the Southwark and Vauxhall to the East London, if you wanted to help the Grand Junction you would have to go westward?—Yes; the Southwark and Vauxhall could help the East London, the East London could help the New River, and the New River could help us.

15,739. It would work that way?—Yes, it would work that way.

15,740. That is the point?—If you look at it you will see the scheme is really based, upon passing nearly 20 million gallons of water in every case except one from several companies to one company. The exception is in the case of the Chelsea Company, because the Chelsea total supply at present is only 14 million gallons, and therefore we consider it is only necessary in that case to supply 14 million gallons for such a purpose.

15,741. I am trying to compare in my mind the relative merits of Scheme No. 2, which is the passage of water from the west towards the east, with the arrangement which has been already made of going up to the East London and passing water possibly from the east towards the west?—You could pass water either way through No. 2 Scheme.

(*Chairman.*) No, no.

15,742. (*Sir John Dorington.*) We have got an existing scheme?—I beg your pardon.

15,743. It is a scheme that has been created within the last few months, namely, a method of communication between the Southwark and Vauxhall and East London?—Yes.

15,744. The East London communicates also with the New River?—Yes.

15,745. And we know the New River also communicates with the Grand Junction?—Yes.

15,746. With certain additions, which have been described this morning, water to the extent of about 20 million gallons, can pass that way to the East London?—I did not hear that scheme of Sir Henry Knight, and, therefore, I really could not give an opinion upon it.

15,747. Supposing that is a complete scheme at present, would that scheme be as good as the No. 2 Scheme, or does the new scheme present certain engineering advantages over this scheme, which I will call Scheme No. 3?—I think that Scheme No. 2 possesses the great advantage of connecting the works of the companies together, and not the supply mains.

15,748. On the other hand, the other one is already accomplished?—The other one is to a certain extent already accomplished.

15,749. To a certain extent—that is true.

15,750. (*Chairman.*) What part would the Grand Junction and the West Middlesex Water Companies take in this Scheme No. 2?—Under the Scheme No. 2 they are supposed to supply 3 million gallons a day each to the New River Company.

15,751. Or to any other company?—Under scheme No. 2, 3 millions, I think it is.

15,752. (*Major-General Scott.*) I thought the whole delivery was concentrated at Battersea under Scheme No. 2?—But under a certain portion of the scheme—

(*Chairman.*) We have not had that Scheme No. 2 complete before us—we have not seen that portion of it. See 16,701.

15,753. (*Major-General Scott.*) The scheme as given to us was a delivery by that 36-inch main to Battersea, and thence the water was pumped in various directions to the existing service reservoirs of the various companies, so that from thence it was distributed by the ordinary method in the ordinary mains?—It is 3 millions from the Grand Junction and 3 millions from the West Middlesex.

15,754. (*Chairman.*) Unfortunately, we have never had Scheme No. 2 as a written document before us. Mr. Collins said he did not feel justified in presenting it?—Well, my Lord, I can give you some details in regard to it if you would like to receive them.

15,755. It is new to me (I do not know whether the other members of the Commission are in the same position) that there was any contribution from the Grand Junction or West Middlesex under that scheme?—That is so.

(*Chairman.*) I thought it was all on delivery.

15,756. (*Major-General Scott.*) There is a delivery at the present moment of the Grand Junction and West Middlesex Water Companies to the New River Company?—That is so.

15,757. Do you propose the continuation of that?—Not exactly, because, you see, at the time of highest delivery, in June and July, we should not be able to spare all that amount of water, and, therefore, there would have to be certain works made which would enable us to supply the water, and we should also have, by inter-sale with the Chelsea, to get the power of drawing more water from the river to give in excess of our ordinary quantity for this very purpose.

15,758. If that is part of No. 2 Scheme, can you describe shortly what the details of it are?—Yes, I can.

(*Mr. Pember.*) As a matter of fact, if you look at Question 15,125, the witness gives the evidence as to that.

(*Witness.*) I thought Mr. Collins gave it yesterday.

(*Mr. Pope.*) I understood Mr. Balfour Browne to ask this morning that that Scheme No. 2 might be tabulated so that we might deal with it, and I promised to do so, and now, if your Lordship and the Commission desire it, we can undertake it. I do not say every engineer will agree to every detail, but we will agree to put upon a cartoon what Mr. Collins really suggested as to Scheme No. 2, so that it may be before your Lordship in a regular tabulated form. We can do that by the time the Commission meets next week.

(*Chairman.*) I should be very glad.

(*Mr. Freeman.*) It is very difficult for us to ask any questions until we have seen that scheme in detail. I really do not know what it is.

(*Major-General Scott.*) What is the number of the question you refer to, Mr. Pember?

(*Mr. Pember.*) It is at Question 15,125. The witness says: "Next season, if that plan were adopted, we could give from the New River Company at the Lea intake to the East London, supposing them to be the receiving company, 6 million gallons a day; we could give 3 million gallons a day from the Grand Junction Company, and 3 millions from the West Middlesex Company, taken through the New River and given at the Lea intake. That would be 12 millions." Then he goes on afterwards—

(*Mr. Pope.*) I do not know whether that is the point in it as to the figure.

(*Chairman.*) Yes.

(*Mr. Pember.*) My Lord thought they had not been mentioned,

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15,759. (*Chairman.*) I did not understand that it was any part of the scheme. Then that leads me to ask you this. With your existing plant and your existing powers, what amount of surplus water could you deliver to this inter-communication scheme?—We could deliver very little indeed in the height of summer.

15,760. How much?—Possibly not more than 1½ million gallons a day at the outside; and on some days not quite so much. For a day or so in the year we are getting, perhaps, 23½ million gallons supply in the height of summer.

15,761. To enable you to deliver 3 millions, or to deliver more than you are delivering now, what works would you require, and what expenditure would you require to incur?—We should require a main, probably, from Kew Bridge to Campden Hill; and another main, a separate main, from Campden Hill to join the New River works again in Oxford Street, which we have just now coupled with one of our service mains to make the coupling up complete between the works of the companies. But the expense of that is included in this scheme.

15,762. So I thought. It is included in the 255,000?—Yes.

15,763. What I ask you is, what would be required beyond that?—We should not want anything, I think, beyond that. It is all included in it.

15,764. Where are you going to get the water from?—As regards the water, as I said just now, we should require to have additional powers to take it from the Thames; but we think we could obtain that by inter-sale from the Chelsea Company, who have 8 million gallons to spare at that time as we suggest. In fact, under the present arrangements we could do that, because the Thames companies have powers of inter-sale between themselves, and we could take—the West Middlesex and ourselves could take—6 million gallons from the Chelsea Company upon an equitable price being paid for it, and deliver it for the benefit of the other companies.

15,765. But then, *pro tanto*, that will diminish the contribution of the Chelsea Company?—But the Chelsea Company have no contribution to make under this scheme.

(*Mr. Pember.*) No, that is so; it was not taken into consideration. I ask the question a little later on: what about the Chelsea Company? And the witness said he had left the Chelsea Company out of the scheme for the present.

15,766. (*Chairman.*) Why is the Chelsea Company to contribute nothing, if it has a large surplus?—Because it happens to be the least expensive way of filtering and of laying the mains to do what we want.

15,767. (*Sir John Dorington.*) Are there adequate means of filtering?—We could filter.

15,768. And pass the water into your filter beds?—Yes.

15,769. You have sufficient filter beds?—We have sufficient filtering beds to work in that way for the time that any emergency would render necessary.

15,770. The Chelsea Company have not got those extra filtering beds?—I think not.

15,771. (*Chairman.*) Have you filtering beds enough to work through the whole summer and autumn of this year?—We should have to force the filters a little. We should have to let the filters run rather faster than ordinarily would be the case; but, as a matter of fact, we could do it.

15,772. That means imperfect filtration, I suppose?—No. I must guard against that. Major-General Scott will know we have 22 acres of filtering beds to filter at the outside 23½ million gallons a day. We shall have, for some two or three years, sufficient filtering power to filter the additional quantity which is contemplated in this report. We happen to have put down some new filters, and have altered some old ones, which has improved the quality of the filtration plant very materially.

(*Major-General Scott.*) I must reserve my opinion.

(*Witness.*) I did not intend to ask for your opinion, sir.

15,773. (*Sir George Bruce.*) How are you off for storage reservoirs?—As to storage reservoirs, we have 45 million gallons storage reservoir at Hampton in which we have also altered the working.

15,774. Are you making any increased storage?—We are one of the companies that have joined with the Staines Scheme, and we are making what would be tantamount to 1,100 million gallons storage, for our company.

15,775. Then you would not require to draw any more from the Thames when you get the storage reservoirs?—No, quite so.

15,776. You would have the required quantity?—Yes, quite so.

15,777. (*Major-General Scott.*) It has been suggested to me to ask you something more about this 36-inch main and the joint use of it by the Southwark and Vauxhall Company and yourself. Do you think that the Southwark and Vauxhall Company require to take 5 million gallons a day for their own use?—That is what I understand from Mr. Restler.

15,778. That is to say, I presume, that 5 million gallons a day would be filtered for the use of the Southwark and Vauxhall Company at Battersea?—At present, as far as I understand, that is so, but I think that is a question that you will really get more definite information upon from Mr. Restler himself. I can only tell you what I have understood him to say, but I am quite sure he would be very willing to give you any information you want.

15,779. I do not know whether we are going to have Mr. Restler re-called, but you mentioned the matter, and I thought it would be just as well to clear it up if we could do so. I presume that this 5 million gallons will be filtered at Battersea, and then taken away from there by the Southwark and Vauxhall Company by its ordinary means?—The 5 million gallons, that is?

15,780. Yes?—Yes, I presume so.

15,781. There is no question of using the 36-inch main for two purposes for filtered and unfiltered water?—No, there is no question of that.

15,782. I thought not?—No, certainly not.

15,783. (*Chairman.*) Then as I gather the only thing that your company—the Grand Junction—stand in need of is more water?—More water, not for our own needs but for the needs of others.

15,784. For this inter-communication purpose?—Exactly.

15,785. That you propose to get by an arrangement with the Chelsea Company?—Yes.

15,786. Or I suppose by an enlargement of your own powers of pumping from the Thames?—Yes. Of course, when the Staines Reservoirs Scheme is completed in about two years time, we shall have power to take 12 million gallons more from the Thames daily, and then we shall have plenty of water to interchange with anybody if we are allowed to do so, but the absurdity of the thing is that Parliament puts upon us a restriction that we cannot help each other when we want to.

15,787. (*Chairman.*) I do not know that I have anything more myself to ask you?—I have only to say that my opinion is that the prohibition of inter-sale should be opposed.

15,788. That is essential, of course?—It is entirely opposed to public interest. I also agree that the sinking fund clause should not apply to any capital raised for the purpose of inter-communication, as their construction goes entirely beyond the obligation of any company.

15,789. On what principle do you say that?—Because their construction goes entirely beyond the obligations of any company. There could be no profit on the works. These works must necessarily mean on the whole a diminution of the profits of the Company.

15,790. The whole quantity of water supplied by these works will be sold to some consumer or another?—But it is the expenditure of, I was going to say, the unnecessary capital from the view of each company—unnecessary capital.

15,791. Yes, but the water will ultimately be supplied upon the ordinary terms, the same as any other water to consumers?—So it will be, but we have to expend a large amount of additional capital to get it; and I say, therefore, that that capital ought not to be subject to sinking fund clauses. That is the argument which I should use.

(*Mr. Pember.*) There is some other capital in this. It may be 50 years without being used.

(Chairman.) Yes, that is true.

(Witness.) There is no extra water rent coming in for it, not the slightest. We have got to do this out of our own revenue. The interest must be met by our revenue, and it is a diminution of profit. There might be a recoupment in a dry year to one company, but, upon the whole, it will be absolutely out of the pockets of the shareholders of the companies. I mean the interest and charges.

15,792. (Mr. Mellor.) The question is, of course, whether it is not one of the risks that you ought to run?—Quite so; but I think it is a question upon which Parliament should meet us in a fair and equitable spirit.

15,793. (Sir George Bruce.) Do you agree with the other gentlemen who have given evidence, that this may perhaps be a desirable thing as a matter of assurance, but that practically you do not expect it will be of any use?—Practically, I do not think it will be of any use—after next year, at any rate; although I do not pretend to speak upon that, because there may be other arrangements made which might render it unnecessary.

15,794. (Mr. De Bock Porler.) Do you think that the emergency arrangements made this year will be sufficient to carry you over another year or two?—Probably with a little addition that might be so.

15,795. (Mr. Pember.) There is one question which I would ask you, Mr. Hunter. You said that in June and July—I think those are the months you gave—it would be only possible for the Grand Junction Company to give about 1½ million gallons of water at present?—Yes.

15,796. But in the other months, say August and September, when the great needs of the East London Company come, you are giving 3 million gallons?—Yes, and we are giving 3 million gallons a day now.

15,797. (Chairman.) What, to the East London?—To the New River for the East London. It is practically the same thing.

The witness withdrew.

Mr. JAMES WILLIAM RESTLER recalled and further examined.

15,807. (Major-General Scott.) Are you, Mr. Restler, in a position to give us any definite information about the connexion of the additional pipes through that subway which was mentioned by Sir Henry Knight?—Yes. The answer which Sir Henry Knight gave, I think, was with a view of increasing the present quantity of from five to six million gallons, which we are at present affording to the East London, to a possible 10 million gallons.

15,808. (Chairman.) Yes?—Of course, at present the connexion was simply as a matter of time, limited to connecting their system to ours at the nearest possible point, and the nearest point that we had a main of any considerable size was at the corner of Bermondsey Street in Southwark; at that point we have a 20-inch main. Of course, there is a certain demand by our own district on that main, but to enable the maximum quantity possible to be got through to the East London, we made a 20-inch connexion and increased the quantity by transferring the reservoir from which that main is supplied from 150 feet above Ordnance to a reservoir 200 feet above Ordnance, so that we had an additional head of 50 feet to provide for the increased quantity we were passing through, and that has worked fairly well, so much so, that we have never had a complaint from our own district during the whole time this additional supply has been afforded. But five to six million gallons is quite the maximum that the present main would enable to be transferred, so that, if it were sought to increase that quantity, say to 10 millions, then there ought to be an additional main between Nunhead and the Tower subway.

15,809. (Major-General Scott.) Bringing it right through the subway?—Right through the subway, I think, would do it.

15,810. Would that be by connecting it with the existing main?—No. I should prefer to lay a distinct main right away from the reservoir, so that any portion of their district they might like to supply from that source would be supplied quite independently of the demands of our own district.

15,811. Then there would be two mains through the subway, would there not?—No, I think not. I think

15,798. (Major-General Scott.) But if the East London were to exercise that prudent measure of taking auxiliary water at the earliest possible moment of a drouthy season, so as to save the store, then they would wish you to supply at a date when you say you could not supply; is not that so?—Exactly. We could not supply any large quantity in June and July.

15,799. So far, then, your help would fail at a time when the East London Company might require your assistance?—Exactly, unless we had power to take more water from the Thames.

15,800. (Mr. Pember.) Until your Staines reservoirs are complete?—Until our Staines reservoirs are complete.

15,801. (Major-General Scott.) Will those connexions carry your own water during the season of stress, as far as you are concerned, and the additional water that the East London might ask you to give?—No; I think, in addition to that (I am obliged for being reminded of it), we might have to put in another main from Campden Hill.

15,802. (Sir George Bruce.) To where?—To meet the New River main. It is intended in the other scheme that we should put that in.

15,803. (Mr. Pember.) You did mention it?—I did mention it.

15,804. (Chairman.) To meet the New River main where?—To meet the New River main in Oxford Street which they have recently laid down from the New River Head to join our present supply main.

15,805. (Major-General Scott.) It would be a continuation from the main straight to the Campden Hill reservoirs?—Yes, exactly.

15,806. Would the pumping main to the Campden Hill reservoir answer the purpose?—I think it would; but we should manage to supply an extra 3 million gallons daily with that addition.

Recalled,
Q. 19,913.

Mr. J. W.
Restler.

the present main is quite equal to six million gallons, having regard to the difference in pressures. If a 30-inch main were brought from our Nunhead reservoir down to the subway, and the 20-inch main were slightly increased, I think it would be fully equal to delivering 10 million gallons.

15,812. Provided there was a special main from Nunhead to the junction?—Yes.

15,813. I understand what you mean. Then there was a connexion with the Chelsea Company which was described by Sir Henry Knight?—Yes. That is a connexion between their three 24-inch mains, I think, coming from their Putney Heath reservoirs and crossing the Thames at Putney to their district. We, in the Richmond Road, have a 36-inch filtered main, and a 30-inch main of unfiltered water at high pressure, which crosses theirs at right angles. It is proposed as an additional safeguard to connect either one or more of their 24-inch mains with our 30-inch main, and in the event of any interruption in our 30-inch main that would enable us to draw a supply for our own district from there to the Putney Heath reservoirs, or in the event of any interruption in their pumping mains, it would enable us to pump a supply from our 30-inch main into their reservoirs or into their district.

15,814. Then is the idea that you are to get some more water from the Chelsea Company for distribution in your own district, and thus put yourself in a position to give more to the East London and in that way relieve you of the work of supplying some part of your district?—No. It would be a very complicated thing to do that, and I would not go so far as to say it could be done.

15,815. How is it to work out then?—That connexion would be more as a safeguard against failure in any portion of our western district should an accident happen to either of our pumping mains or an accident anywhere else.

15,816. I think Sir Henry Knight advanced the view that it would supplement the supply going through the Thames Subway?—Of course, it could be done, but it would be a very circuitous and I fancy troublesome

See 15,552.

Mr. J. W. Restler. system to work, because, there are so many questions of pressures and levels that come in, and there may be also times when the pressures are not maintained coincident with ours, and when we are at a high level supply, their pressure might be due altogether to the draft of their own district.

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15,817. Would you look upon that as a last resource, that supply being somewhat hypothetical?—I should look upon it as a last resource. I should not rely upon working that till every other means had been exhausted.

15,818. I think the supply was made up to 22 million gallons in that way and other ways?—Yes.

15,819. (*Mr. Pember.*) To 24 millions?—Yes, 24 millions.

15,820. (*Major-General Scott.*) How is the additional quantity made up?—I am afraid I have not the details of Sir Henry Knight's figures before me now, but, of course, my own personal opinion about that matter is, that it would be infinitely simpler to take the whole of this supply from Battersea to cut off the district works of all the companies, and let them rely for their own distribution upon their own arrangements, and in the case of any additional supply from Battersea, pass it directly into the reservoirs of each company quite irrespective of the various districts.

15,821. (*Sir John Dorington.*) You prefer No. 2 Scheme in fact?—Yes, in fact, I believe that is the solution of the whole question.

15,822. Might I ask if that pencil line that I have drawn represents what you mean. [*Shewing a Sketch to the Witness.*] This is your 20-inch main?—Yes. [*The Witness explained the route of the 20-inch main with the connecting main between the Southwark and Vauxhall and East London systems.*]

15,823. (*Chairman.*) Do I understand that you are now getting water from the Chelsea Company?—No, the connexion has not been made as yet.

15,824. But you are making a connexion by which you will be able to get water from the Chelsea?—Yes. It is practically arranged between the two boards now. The actual works have not been commenced, but I believe we shall do so within a few weeks, and possibly within a few days.

15,825. Do you conceive that you have legal authority to do that?—Yes, as regards the opening up of the road and making the connexion. Of course it is within our Parliamentary district, and we can open the roads at any time.

15,826. Yes, but have you power to take, and the Chelsea Company power to give you water for your use in your district?—I do not know what the limiting powers of Chelsea would be; but we should assume that up to the extent of the supply that we can obtain from other sources than the Thames, we could transfer that to the Chelsea Company the same as we are doing to the East London.

15,827. But in this case you are getting water, as I understand, or you are going to get water from the Chelsea?—Of course, there is no definite intention to take water from the Chelsea.

15,828. But you are providing mains for doing so? Yes.

15,829. Which you are going to use some day or other?—If they could be used, I suppose we should have to risk that. If the connexion were made, I take it the Chelsea would afford the supply if we called upon them to do it.

(*Mr. Pember.*) Section 18 of the East London Water-works Act, 1897, throws some light upon that question that you asked, my Lord.

(*Chairman.*) What does it say?

(*Mr. Pember.*) It is this: "The Company"—that means the East London Company—"on the one hand" and any one or more of the metropolitan water companies, that is to say, the Southwark and Vauxhall and the Chelsea, "on the other hand, may from time to time enter into and carry into effect contracts, agreements, and arrangements, for or with reference to the user by the Company of any works, mains, or pipes belonging to such other company or companies and the supply of water to the company by any such other company or companies." If you put in the names of the companies I think that becomes fairly clear.

(*Chairman.*) That is in an East London Act, is it?

(*Mr. Pember.*) Yes, the Act of last year, 1897.

(*Chairman.*) So that the East London Company is free, then, from any prohibitions against inter-sale.

(*Mr. Pember.*) I should be very sorry to say that. I am not now on the question of inter-sale, but I am on the question of the user of the mains and pipes.

(*Chairman.*) But I was on the question of inter-sale. You propose to buy this water from Chelsea, I suppose?

(*Witness.*) Yes, we should, but Mr. Hunter reminds me that in the Thames Conservancy Act of 1894 there is a power of inter-sale, and of course the Chelsea Company are well within their limits.

(*Mr. Pember.*) I think I might have answered your Lordship's question in the affirmative. I think it does allow inter-sale, because it is not only as to works, mains, and pipes, and the user of them, but the supply of water also.

(*Mr. Rickards.*) I appear for the Chelsea Company, and I have not looked into this matter, but I will do so before we meet again.

(*Chairman.*) We have been led to suppose hitherto that there was a legal objection to the sale of water by one metropolitan water company to another, but as far as the East London goes—

(*Mr. Pember.*) And any company with whom the East London can deal. It is only for an emergency.

(*Mr. Pope.*) With reference to the existing connexions, you might ask by what right the Southwark and Vauxhall or the East London use the Thames Subway at all? It is private property, and it could only be done by the exercise of Parliamentary powers or by agreement.

15,830. (*Chairman.*) By agreement, I presume. (*To the Witness.*) Do you know at all?—Yes, I was with Mr. Bryan when the arrangement was made for the use of that subway.

15,831. With whom did you make the arrangement?—With the present owners, the Hydraulic Power Company.

15,832. It was a pure matter of private bargaining between one company and another?—Entirely, and the arrangement was, I think, for seven years.

15,833. You pay a wayleave?—We pay a wayleave for seven years.

15,834. (*Mr. Pope.*) Have you a right to increase your pipe diameter? Is there a limit to the amount of the carrying power of the pipe that you put in the subway; or how is that?—No, there is no limitation, except that the size of the main is not to interfere with theirs.

15,835. One pipe of any size you like, so long as it does not interfere with theirs?—Yes, that is it.

(*Mr. Pember.*) We have an arrangement by which we pay 300l.

(*Mr. Pope.*) Yes; but the question is, what is the extent of the easement, because, if it involves laying a new pipe in the subway in order to complete the existing connection, one wants to know on what terms it is to be done.

15,836. (*Chairman.*) Yes. (*To the Witness.*) Have you a right to increase your existing pipe?—I do not think we could increase the present size; but that would not prevent us increasing the quantity, because, if we brought the larger main down, we should increase the velocity.

15,837. Would you increase the pressure?—Yes, we should increase the velocity if we increased the pressure.

15,838. (*Major-General Scott.*) Is there room for another pipe there?—There is plenty of room at present. The Hydraulic Company, of course, are very careful to provide for their own requirements; and they retain the larger share for any possible extensions of their own.

15,839. (*Chairman.*) What is this subway used for now?—Nothing except the Hydraulic Power Company's mains.

15,840. Was it ever open to the public?—It was open originally to the public, but it was purchased eventually by the Hydraulic Company to enable them to pass their own hydraulic mains through. It was 6 feet in

diameter, and there was only one 7-inch main there, so that there was ample room for the 20-inch main, of course.

(*Mr. Freeman.*) In the Blackwall Tunnel, which the County Council made, there is no arrangement as to payment.

(*Witness.*) That is Kent, and I do not know about that.

(*Mr. Pember.*) I am not quite sure, my Lord, that this question as to prohibition of inter-sale is quite understood.

(*Chairman.*) I do not understand it in the least.

(*Mr. Pember.*) I will make an attempt to see if I can understand it. By Section 295 of the Thames Conservancy Act, 1894, inter-sale is absolutely legalised between the companies up to the point of 24½ million gallons a day that most of them take from the Thames, and there is a provision that, if any agreement that they make for inter-sale is to be a continuous thing, and not a mere temporary matter, that every agreement for such continuing supply shall be made in writing, and shall contain due provision that the supply so made shall not be withdrawn without the consent of the purchasing company. So far, therefore, as regards what they take from the Thames up to 1894—the amount of which we all know—there is a power of inter-sale; but there are two statutes in which inter-sale is forbidden. One is the Staines Reservoir Act of 1896, which forbids inter-sale of the water which is impounded by that particular reservoir, and which is to be let out to the amount of 35 million gallons a day between the three companies who make the reservoir, subject to 45 million gallons a day being taken on emergency. Against that water there is a prohibition of inter-sale, and so against the water which the Southwark and Vauxhall Company take under their Act of 1897–98; there is a prohibition there, but it is only in those two Acts. But with regard to the rest of the water taken from the Thames, it is quite clear there may be inter-sale. Then comes our Act, the East London Act of 1897, in which we have the power to contract for water. It is quite clear, therefore, to my poor mind, that the East London Company may contract with any one or more of the companies for any amount of water, which may be called water, which they take from the Thames under the Act of 1894.

(*Sir John Dorington.*) Any water, in fact, which they can legally sell.

(*Mr. Pember.*) Yes, and they can sell anything except the water impounded in the Staines reservoir.

(*Chairman.*) Is not there this hidden difficulty, that no company is empowered to take water from the Thames except for the purpose of supplying its own district?

(*Mr. Pember.*) Yes.

(*Chairman.*) Would not that impliedly forbid their taking water from the Thames to sell to another district?

(*Mr. Pember.*) Not if there is a distinct enactment, I should venture to say.

The witness withdrew.

Mr. THOMAS FARMER PARKES called and examined.

15,841. (*Chairman.*) You are, I believe, engineer to the Lambeth Water Company?—Yes.

15,842. Would you tell us what amount of water the Lambeth Water Company could spare for any inter-communication scheme with its present plant and present appliances?—With its present plant and appliances the Lambeth Water Company could spare nothing during their time of maximum supply.

15,843. What is their time of maximum supply?—I should say July and August, this year, certainly.

15,844. They could spare nothing?—They could spare nothing then—that is for the present time. Of course, works are in progress which would eventually enable them to supply more.

15,845. What works?—Their own storage works at Molesey, and new mains which are about to be laid.

15,846. New mains from where?—A new pumping main from Ditton to Brixton, and a new unfiltered main

(*Chairman.*) I agree. The Thames Conservancy Act of 1894 seems to remove that difficulty.

(*Mr. Pember.*) It does, so far as that water is concerned.

(*Mr. Pope.*) But the Thames Conservancy Act of 1894 does not seem to contemplate one company buying water to sell to another in difficulties. It restricts entirely the power of sale between the two companies to water to be used by the buying company for the purpose of its own district. Section 295 does not seem to contemplate at all the contingency of the Southwark and Vauxhall Company, say, buying from the Chelsea Company for the purpose of selling to the East London Company. If you look at section 295, it says: "Water which is not required for the purposes of the district of supply of such company to any other or others of the said companies, to be used only for the purposes for which the said companies are respectively empowered to provide and use water." The companies are only enabled to provide water for the supply of their own district.

(*Chairman.*) That is only inter-sale between two adjoining companies, and not for others.

(*Mr. Pope.*) Yes, that is the difficulty of that clause.

(*Mr. Freeman.*) The Thames Conservancy Act makes it expressly subject to any Act existing at the time.

(*Chairman.*) Is there any Act existing at the time which interferes with inter-sale?

(*Mr. Freeman.*) It has always been a great question whether the words of the Acts, that they shall only take water for their own district, do or do not override those words.

(*Mr. Pember.*) Then what is the use of those Acts?

(*Mr. Claude Baggalay.*) This is subsequent to their Act.

(*Mr. Pember.*) But the point, however, that I want to suggest is this, that although there is that section (I confess, at the moment, I am not inclined altogether to accept the limitation), it may be limited in the way my friend Mr. Pope suggests; but, as far as the East London and any company dealing with them is concerned, section 18 of the Act of 1897 absolutely explains that.

(*Mr. Pope.*) The difficulty is not in dealing direct between the East London and the adjoining company, but the difficulty is the intermediate company, which is to be the transferor in the bargain.

(*Chairman.*) Yes.

(*Mr. Pember.*) That is got over by section 18, which enables us to deal with any one or more companies. It is only limited as to two companies.

(*Chairman.*) However, it is a matter that had better be made clear.

(*Mr. Pember.*) Quite so.

(*Chairman.*) Is there any other engineer of the company here?

(*Mr. Pember.*) Mr. Parkes, the engineer of the Lambeth Company, is here.

(*Chairman.*) Then we will utilise the time by taking his evidence.

Mr. J. W. Restler.

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Recalled,
Q. 25,280.

Mr. T. F. Parkes.

from the intake at Molesey to the filter beds at Ditton. The contract for the pipes is just let for these two works, and they will be ready to be proceeded with almost immediately.

15,847. When they are completed what amount of filtered water would you be able to deliver under any inter-communication scheme?—I could hardly say now, but not a very great amount till we have made more filter beds.

15,848. About what amount?—5 or 6 million gallons a day we might deliver.

15,849. Five or 6 million gallons a day?—Yes, I think so.

15,850. Before your filter beds are enlarged do you mean, or at once?—No, we must have some addition there first.

15,851. Therefore that throws your possible contribution of 5 or 6 million gallons some years off, I suppose?—Some two or three years off.

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15,852. Could you then even during July and August deliver that quantity?—With the new works.

15,853. Yes?—Yes, I think so.

15,854. But not for the next two or three years or even more?—Hardly that. I should say three years.

15,855. For the next three years then you are useless during the dry months?—During those two or three months, yes.

15,856. Those are the very three months when the inter-communication would be wanted?—Yes, except in case of accident.

15,857. Somehow or other no company has broken down through accident yet, has it, since the water companies began?—I do not know. I should not like to say that.

15,858. There have been burstings of pipes, perhaps?—Yes, and mains.

15,859. (Mr. De Bock Porter.) You had a bursting of mains, had not you, once?—Yes, some years ago. It was a very unfortunate accident. We have three trunk mains from Ditton to Brixton, and they burst one after the other. That was the time that Sir Henry Knight spoke of. A stand-pipe was fixed to supply our customers, but that was a question of a very short time—a question of 48 hours, I believe—before the supply was partially resumed.

15,860. (Mr. Pember.) Are not you sinking a well into the chalk at Selhurst?—Yes, we are sinking a well into the chalk at Selhurst, which will give us a supply of 2,000,000 at any rate, but of course that will not be completed for two years or 18 months.

15,861. (Chairman.) What I was trying to get at was what you could do for the inter-communication scheme, and for two or three years you will not be able to do anything?—Then it is a question of having further powers to take water from the Thames.

15,862. (Sir George Bruce.) Are you increasing your storage reservoirs?—Yes.

15,863. Then you will not want an increased quantity any particular day from the Thames when you have got storage reservoirs?—Possibly not. I do not think we should want very much, but I should not like to say that.

15,864. (Mr. Mellor.) Where is the intake?—At West Molesey.

15,865. (Major-General Scott.) You have not got special powers to take in excess except out of your reservoirs?—Not at present beyond the maximum. We could go up to the maximum.

15,866. If you pumped up to the maximum?—We should not have power to put any more into the reservoirs unless we had further powers.

Cross-examined by Mr. FREEMAN.

15,867. Would you just give me a figure which I omitted to get from another witness. Your actual powers of taking out of the Thames are 24½ million gallons?—Yes.

15,868. During the month of September was your average daily draught 31,891,317 gallons?—I have not the figures before me, but I will take it from you that that is right.

15,869. So that during September you would draw largely in excess of your legitimate draught?—No, I do not admit that.

15,870. The difference between 24½ and 31 millions?—It was taken out of the gravel beds, not out of the river at all.

15,871. (Chairman.) Is that the six months' average?—No, it is for September; it is a monthly average.

15,872. Yes, but how is it measured, is it a six months' average or a monthly average?—No, 24 hours.

15,873. From day to day?—Yes.

15,874. How could you justify exceeding it then?—We have spring water—we have taken spring water from the gravel beds.

15,875. (Mr. Freeman.) Where is that?—At West Molesey.

15,876. Alongside the Thames?—Yes.

15,877. Then that is Thames water in another form? I do not admit it.

(Mr. Freeman.) That is the question.

15,878. (Chairman.) Where does it come from?—It comes from the land.

15,879. Would it go to the Thames if you did not pump it?—That I am not prepared to say, but I do not think it would—not there, anyhow.

(Mr. Pember.) It is rather a mixed question, my Lord.

15,880. (Chairman.) Is it water that remains suspended in this riverside gravel, and does not come either way?—It stands in the gravel at a certain level, and that level is as a rule above the level of the river, which does not look as if the water was flowing out of the river. But this question has been argued over and over again by greater experts than I am, and they have never come to any conclusion on it.

(Mr. Pember.) At all events, no one has ever been able to prevent them taking that eight million gallons on the ground that it is Thames water, and it has been going on for 22 years now.

Now, I want to say that Mr Bryan will be ready to be put into the box next Monday, first thing, if it will suit your Lordship to take him then. It would be a very great convenience for him to be taken then.

(Chairman.) Very well, we will take him first on Monday. Meanwhile, if the County Council have any evidence to give on this branch of the subject, we shall be much obliged if they will be ready with it on Monday, because we hope to finish everything early on Monday.

(Mr. Pember.) It is thought, perhaps, you would like to have a copy of that Act of 1897, from which I read a section.

(Chairman.) No, I am much obliged to you.

(Mr. Freeman.) Might I say that if we are to be of any assistance on this question, it would be of great use to us if we could have the details of that No. 2 Scheme before Mr. Bryan gives his evidence.

(Chairman.) I have desired the details of No. 2 Scheme for myself very much.

(Mr. Freeman.) I daresay my learned friends will let us have that as soon as it is approved by the Chairmen.

(Mr. Pember.) As soon as we can get it. When we get it you will have it too.

(Chairman.) We have got it in a very incomplete shape at present.

(Mr. Pember.) No doubt.

(Mr. Pope.) No one has got it in a complete shape; we have not got it.

(Mr. Rickards.) It is on this question of inter-communication, I understand, that your Lordship wishes to see the engineers on Monday?

(Chairman.) Yes.

(Mr. Rickards.) It is not on the general question.

(Chairman.) No, I will not go into the general case.

[Adjourned to Monday next at 12 o'clock.]

THIRTY-FOURTH DAY.

Monday, November 14th, 1898.

At the Guildhall, Westminster, S.W.

PRESENT:

The Right Honourable VISCOUNT LLANDAFF, CHAIRMAN.

ALFRED DE BOCK PORTER, C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.

ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary*.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River Company.
 Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., appeared as Counsel for the Kent County Council.
 Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared for the Southwark and Vauxhall Water Company.

Mr. WILLIAM BOOTH BRYAN re-called and further examined.

15,881. (*Chairman*.) You are a member of the Institution of Civil Engineers?—Yes.

15,882. And of the Institution of Mechanical Engineers, and a Fellow of the Meteorological Society?—Yes.

15,883. And have been for 16 years chief engineer to the East London Waterworks Company?—Yes.

15,884. You were previously waterworks engineer to the Blackburn Corporation, I believe?—I was.

15,885. Of course, you are acquainted with the system of the East London Company, and also with the systems of the other metropolitan companies?—Yes.

15,886. We will take you at once, I think, to the circumstances of the supply this year, 1898. What population are you supplying?—1,300,000.

15,887. What were the quantities of water that you supplied on the average in the month of June?—In the month of June the average daily supply was 42,563,000 gallons.

15,888. What was it in July?—In July it was 44,959,000 gallons.

15,889. And in August?—In August it was 43,170,000 gallons up to the 22nd, when the intermittent supply was given in place of the constant; but for the whole of August the average was 40,656,000 gallons a day.

15,890. (*Major-General Scott*.) What supply did you give from the 22nd to the 31st August; will you tell us that?—I have not the exact figures, but in the first few days of the intermittent supply the amount was not very much less than when we were giving the full constant. I can supply you with those figures, but I have not them before me.

(*Mr. Balfour Browne*.) We shall have them some time, I suppose.

15,891. (*Chairman*.) What was the supply in September?—In September it was 33,149,000 gallons a day.

15,892. And in October?—34,202,000 gallons.

15,893. Those figures of supply are not very far short of what you supplied in 1897, I see, by looking back to the figures we have had before us?—In 1897 the figures up to the end of August are about the same, but for September and October the figures for this year are much less than those figures.

1 98598.

15,894. What was the supply per head, let us take it, in September?—In September the supply was about 25 gallons per head per day, of which about 7 gallons per head per day was the trade supply, but that includes the supplies to hospitals, workhouses, and asylums; the remaining 18 gallons per head was pure domestic supply.

15,895. Would you say that the 18 gallons per head of the domestic supply prevailed throughout your district?—Throughout the district.

15,896. You mean that is the average of the whole?—That is the average of the whole.

15,897. Were there not parts of your district which have got much less?—I do not think so, except perhaps in the country districts, where the supply is always very much less.

15,898. Let me take such a district as Green Street, Upton Park, for instance; are you acquainted with that?—Yes.

15,899. Is that a high level district?—No, that is in East Ham.

15,900. I have a communication from a gentleman, who gives me his address in Green Street, Upton Park, who says that 25 gallons per house is more like the quantity they had?—They would not have had storage cisterns there.

15,901. Yes, he has storage cisterns, he tells me?—The supply was on in Upton Park precisely the same as in the rest of the district—the same number of hours—and the supply was turned on punctually and turned off punctually twice a day.

15,902. (*Mr. De Bock Porter*.) But were the supplies delivered into the house over the whole of that period?—Yes, over the whole of September—the whole of the period—we gave the supply to the same number of houses throughout the district.

15,903. Every house in the district had the supply delivered into the house; did they not have to fetch it from outside?—Every house had the water delivered into it throughout the district.

15,904. (*Mr. Pember*.) The same as usual, except in the matter of hours?—Just the same as usual. I may say that we have investigated a large number of complaints which have been made, and have found that the want of water in the houses has been due entirely to the fittings being out of order.

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15,905. (*Chairman.*) The letter I have received from Mr. Glover, of 111, Green Street, Upton Park, who tells me that on many days the water never reached his cisterns, which placed him in a worse position than those who got it straight from the main?—If he had a draw-off tap of the usual height for drinking purposes, he would have had the water just the same as everyone else in the district.

15,906. He says that his is not an isolated case, as any of his neighbours will bear witness?—The difficulty does arise in connexion with very high cisterns. When the water is turned on, it naturally has to fill all the lower cisterns first, and the consequence is that as soon as the lower cisterns are filled, the water reaches the higher, and the higher cisterns do not get the full two hours or four hours a day in the same manner as the lower cisterns. That is a natural consequence of the intermittent supply, and the absolute impossibility of filling the upper cisterns until the lower ones are filled.

15,907. (*Mr. De Bock Porter.*) Then a house solely furnished with a high cistern would get no supply whatever?—Yes, they would get the water from their draw-off taps on the ground floor or on the other floors.

15,908. (*Chairman.*) But nothing in the cistern?—Nothing in the upper cistern until the lower cisterns were filled.

15,909. Was there time to fill the lower cisterns in two hours' service that you allowed?—We have had very few complaints—very few indeed.

15,910. You see here is a gentleman who writes to me to say that he and his neighbours were in that case—that although they had got cisterns they had no water?—If that gentleman had written to me, I have no doubt we could have ascertained really whether the complaint was due to his fittings or to the company, and could have put it right at once. We found, in a great many instances, that the ball taps were hung up, and in hundreds of instances, where complaints have come, and where we have found the ball taps deficient, and put them right, we have had no further complaints.

15,911. (*Major-General Scott.*) Have there been no cases in which you attribute the fact of water not reaching the individual consumers to the turning on of numerous taps for an unnecessary length of time?—An immense number of cases that we have investigated.

15,912. Then there have been cases in which water has not reached consumers, in your opinion, from that cause?—Yes. We have found in quite a large number of cases, where the cisterns in certain streets were not filled, that that was due to the simple reason that the whole of the taps, or nearly the whole of the taps, in that particular street were left running. If taps are left running in a street while water is turned on from the main, it is an utter impossibility for the water to reach any elevated cistern at all; in fact, in the case of one street the amount of water wasting by the taps being left running was so great that the sewer man came to the company's foreman and complained to him that he could not go into the sewer, because of the immense amount of water running into it. The foreman took his turncock and went into this particular street and turned the taps, and water immediately lowered so much in the sewer that the man could go on with his work.

15,913. (*Chairman.*) What were your hours of supply?—They vary in every district and in every street. We had time tables printed for every street throughout the district. Starting at 6 o'clock in the morning, 6 to 8 one street would have it, the next street would have it from five minutes past 6 to five minutes past 8, and so on. A time table, something like a railway company's time table, was got out for the whole district, giving the times in the morning and afternoon when the water would be turned on and turned off.

15,914. Would the hours from 6 to 8 and from 7 to 9 about cover the whole?—No, they would go on a little later than that. The last turning on would, probably, be about 8.

15,915. Well, 8 to 10, then?—And again, then, in the afternoon.

15,916. Very well. A man who was in the 6 to 8 district would either have to get up at 6 o'clock in the morning and open his tap, or leave his tap open in order to fill any vessels he might have for storing water?—Unless he had a proper cistern, that would be so.

15,917. Does that not account for the reason the taps were left open?—To some extent it might. The conditions are the same now as in September, but we do not find anything like the amount of taps being left running now as in August and September.

15,918. (*Major-General Scott.*) Under the usual conditions of constant supply, the main and service pipes are in use to a greater or less extent, are they not, during the whole 24 hours, we may say?—Yes, that is so.

15,919. And, therefore, if you are obliged, from circumstances, to limit the draft on the mains and service pipes to a very few number of hours in the day, the stress on the mains and pipes to do the service that is required of them is greater than in the first case?—Certainly.

15,920. And friction would be more hurtful to the supply than it would under the other circumstances?—Yes; but, on the other hand, that is compensated for to some little extent by the greater pressure in the large mains.

(*Major-General Scott.*) That might be so, to some extent.

15,921. (*Chairman.*) You have not resumed, as I judge from what I have seen in the newspapers, constant supply yet?—No, we have not.

15,922. Is it still limited to four hours per day?—Yes.

15,923. Throughout your district?—Throughout the district.

15,924. I do not know whether you have got it there—of course, we could do it by multiplication—but you have not given us the total quantities supplied in those months—July, August, September, and October; can you give us that?—Yes, I can multiply those out for you, to give you the total quantities.

Major-General Scott. I may say that I have worked them out hurriedly myself, and perhaps I may mention them subject to correction.

15,925. (*Chairman to Witness.*) Have you got them there?—No, I have not, but I can do it at once.

(*Chairman.*) As General Scott has been good enough to do it, perhaps you will check it.

(*Major-General Scott.*) Will you take these down—you can check me afterwards? In July the total supply was 1,393,729,000; in August the total supply was 1,260,336,000; in September the total supply was 994,470,000; and in October the total supply was 1,060,262,000.

(*Mr. Pember.*) I bring them to the same amount, and I suppose we are not likely to make a common mistake.

(*Major-General Scott.*) I did it very hurriedly.

(*Mr. Pember.*) So did I, but that is the same amount which I obtained.

(*Major-General Scott.*) The grand total is 4,708,797,000. I also took out—I daresay it may be useful—the total contributions from outside sources.

15,926. (*Chairman.*) I think we will postpone that until we come to the table of supplies. (*To Witness.*) You have a table of supplies in 1898, during the months of July, August, September, and October?—Yes.

The Witness handed in the following table:—

EAST LONDON WATERWORKS COMPANY.

Table 1.
Supplies in 1898.

Source from which Water taken.	Gallons pumped into the District daily on the Average during—			
	July.	August.	September.	October.
1. River Lea	9,478,000	6,354,000	1,032,000	4,683,000
2. River Thames and wells.	16,967,000	19,056,000	19,153,000	18,419,000
3. Storage reservoirs	17,500,000	9,900,000	4,000,000	NIL
4. New River Company	1,013,000	5,346,000	6,129,000	6,083,000
5. Southwark and Vauxhall Company.	—	—	2,029,000	4,801,000
6. Kent Company	—	—	206,000	198,000
Total pumped into district of supply—	44,958,000	40,656,000	33,149,000	34,202,000

15,927. (*Chairman.*) I see that you state you obtained from the River Lea very nearly nine and a half a million in July; 6,354,000 in August; 1,032,000 in September; and 4,693,000 in October?—Yes.

15,928. The corresponding figures in 1897 were 3,611,000 in July; 34,803,000 in August; and 32,302,000 in September?—That is so; but that includes any volume that we drew from storage in 1897. All the water we get from the Lea passes into our storage reservoirs, and we take out whatever volume we require. It may be that the volume coming from the Lea is somewhat less than the figures you have just named—the difference being made up out of store.

15,929. The difference is enormous. Here is the time of stress this last year, and in August you are only drawing 6,354,000 gallons a day from the Lea, as against 34,803,000 gallons in 1897?—That is so.

15,930. That indicates almost a total failure of the Lea supply?—It does indicate that the volume of the Lea was lower in the present year than it has ever been known before.

15,931. Lower to the extent of 6 millions odd as compared with 34 millions odd?—That is so; but some of that 34 millions may have come from storage.

15,932. Do your figures for the year 1898 include nothing from storage?—Yes.

15,933. Very well; then it is quite fair to compare the two sets of figures?—I do not think it is quite fair to compare the two in one way, because in 1897 the flow of the water was very much greater, and the amount taken from storage was much more minute than in this year. Taking the two figures together would, perhaps, be a fair way of comparing. On the other hand, by the end of September, our storage was depleted almost completely. In 1897 we had a very large volume in store at the end of September.

15,934. At any rate, here is a period of four months during which your supplies from the Lea fell to something less than a fifth of what they were before, and in September, to a thirtieth of what they were before?—It is not quite so. In September we took from our storage reservoirs 4,600,000; in August, 9,900,000; and in July, 17,500,000.

15,935. In 1897 you mean?—In 1898. If you will take the third column, you will see.

15,936. (*Mr. De Bock Porter.*) Those two ought to be added together?—They should be added together.

15,937. (*Chairman.*) I see, that is the answer; your contributions from "storage reservoirs" mean contributions from "storage reservoirs filled from the Lea"?—Yes.

15,938. (*Mr. De Bock Porter.*) Are those storage reservoirs, then, wholly filled from the Lea?—We can and we do pump water into them from some of our wells while the wells are in construction.

15,939. But are the storage reservoirs wholly on the Lea?—Yes, they are on the Lea.

15,940. (*Chairman.*) Then let me take your next line of the supplies you got in those four months of 1898, namely, from the Thames and wells; can you separate what you got from the Thames from what you got from wells?—Yes, I can.

15,941. Then please give us what you got from the Thames in July, August, September, and October, 1898?—In July, from the Thames 9'80 million gallons; in August, 9'50.

15,942. (*Mr. Baifour Browne.*) I do not understand 9'50 million gallons?—Nine millions and a half—in July, 9'80; in August, 9'50; and in September, 9'72 millions.

15,943. (*Chairman.*) What is the figure for October?—I have not got the exact figure in October, but it was about 9'80 million gallons.

15,944. Those are much larger quantities than you drew in 1897?—Much larger.

15,945. You may as well give us the figure from the wells, please?—In July, from our wells 7'17 million gallons a day; in August, 9'55; in September, 9'44, and October would be about 9, but I have not the exact figure for October at present.

15,946. Those, again, are considerably more than double, or three times as much as you would pump from wells in 1897?—That is so.

15,947. So that as regards the Thames, you were nearly reaching the limit of your authorised supply?—We were pumping as much as we could get through it, we pumped a little over the 10 millions, but we make a deduction of 7 per cent. for slip of the pumps; and that deduction of 7 per cent., which was agreed upon some time ago, has reduced the 10 millions to the figures I have just given you. Possibly the slip might not have been anything like 7 per cent. at those times; and we should be getting the full millions through, but we take an average of 7 per cent. slip upon the whole of our engines, so as to make it quite clear that the volume of water we send into our district is not that based upon the pump displacement.

15,948. Were you pumping your wells to their utmost capacity during those four months of 1898?—Not to their full capacity.

15,949. (*Mr. De Bock Porter.*) But you were getting double the supply that you got in 1897?—Much more than double the supply of 1897. Some of these wells are under construction, and they yield more water than we pump. We did not go quicker than was prudent for fear of any breakdown, a breakdown for two or three days would, of course, have left us without a volume of water from that particular well for those two or three days. In the same way with our Thames supply. We got the supply of 10 millions a day through most days, but now and then, perhaps once in five or six weeks, there may be a stoppage for half a day or a little more, to attend to anything that the engine required, or a leak upon the main. That and the seven per cent. is what reduces the average from our Thames yield from the full 10 millions to a little under that.

15,950. (*Chairman.*) Could you, practically, from those two sources, the Thames and wells, have got more water for your district than you did in those four months?—Not from our Thames main. Our Thames main, until we cut it in two and pump a second time, is carrying 10 millions a day, which is as much as it is safe to pass through it.

15,951. But you could have got more water from your wells?—We could have got a little more from our wells but not without some little risk of working the deep well pumps at too great a speed.

15,952. (*Major-General Scott.*) In which case and in the case of a breakdown you would have been worse off than ever?—We should have been worse off. We have a good many duplicate engines, but deep well pumping to run at any great speed is a little risky, and the stoppage of a deep well pump will sometimes take a week, or a fortnight, or a month, whereas the stoppage of an engine above ground or of the pumps above ground is a matter, perhaps, of hours, compared with days with the deep wells.

15,953. The long and the short of it is you pumped as much as was prudent, I suppose?—As much as was prudent.

15,954. (*Chairman.*) Then your next item in your table is what you got from your storage reservoirs. I suppose you pretty well exhausted your storage reservoirs in July, when you drew 17½ million gallons a day?—Yes, in July.

15,955. That drops to 9,900,000 in August; to 4,600,000 in September; and to nothing at all in October?—We took nothing in October.

15,956. I suppose in October your reservoirs were pretty well exhausted?—We generally reserve about 60 or 70 millions in case anything should happen to our Thames main. If the 10 millions that we were pumping from our Thames main were suddenly stopped, the pressure in the district would be so low that there would be no supply at all in some parts of it, so it is necessary to have some reserve, and as we have plenty of reserve engine power at Lea Bridge, that is a safeguard in case that main burst.

15,957. (*Major-General Scott.*) And must that reserve be above the gravitation level?—No. We have means for pumping out of our new reservoirs below gravitation level.

15,958. Perhaps you had better explain what the difference between gravitation level and the level below gravitation level means?—Yes. Our reservoirs at Walthamstow have about 319 acres of water area, the high level reservoirs being at a level of about 12 or 14 feet above the filter beds at Lea Bridge. There is a canal a mile and a quarter long, the canal is 30 feet

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wide, which conveys the water from Walthamstow to the filter beds. When the storage is so depleted that it has fallen below the level of the filter beds, we then have to pump the remaining water in the reservoirs into this canal to enable the filter beds to get their supply. Approximately we have about 160 millions below the gravitation level.

15,959. (*Chairman.*) That is 160 millions in the storage reservoirs?—Yes.

15,960. (*Major-General Scott.*) What may be called bottom water?—Yes, it is bottom water; but that simply arises out of the construction—digging them sufficiently deep to get the material for making the banks.

15,961. Then come, in your table, your New River supplies in those four months of 1898, which, I see, exceeded six millions a day, in September and in October?—Yes.

15,962. (*Mr. De Bock Porter.*) Were you then getting all the New River Company could spare?—Yes.

15,963. (*Chairman.*) From the Southwark and Vauxhall Company, I see, you got nothing in July, and nothing in August?—No; we took the water from the Southwark and Vauxhall on the 19th of September, for the first time.

15,964. Your daily average from them in September was only two million gallons odd?—That is so.

15,965. And in October, 4,801,000?—Yes.

15,966. So that you never reached the six millions from the Southwark and Vauxhall that we have been told about?—No, we have not.

15,967. (*Mr. De Bock Porter.*) Is that quantity increasing at the present time?—It is not increasing. The Southwark and Vauxhall water comes into my company's district at a short distance east of the Tower, and we have allocated it to a district, as though that district were an integral part of the Southwark and Vauxhall Company's district. It is very difficult indeed to so arrange your district as to take any large given quantity of water, except by adding a street now and then, until you get the maximum supply, and that will give you the required pressure. It is a very complicated and difficult thing, and it took us several weeks before we could take as much water as the Southwark and Vauxhall could afford us.

15,968. Is that because the pipes of the East London Company will not stand the same pressure as those of other companies?—They will stand the same pressure as those of any other company; they are made by the same firms, they are of the same thickness, and they are laid just as well, and there is no reason why they should not stand the highest pressure that any company can give in London.

15,969. (*Chairman.*) Then where and how does the difficulty arise?—The difficulty is this: that when we cut off a portion of our district, and join it on to the Southwark and Vauxhall district, we do not know how much water that district will take. Then, if we find that the Southwark and Vauxhall can give us an extra million a day, we shut the cocks, to shut off the supply from the East London district, and add that on to the Southwark and Vauxhall's East London district, and street by street we have added until we have taken, approximately, as much as they can afford.

15,970. We were told last week that they were selling you five or six million gallons now—that seems to be somewhat an overstatement, for it never reached five million gallons?—It has reached much more than that, but we have had one or two bursts on one side of the river or the other, and we have lost a day's supply; consequently, when you take the average, it reduces the figure from five and five and a half millions down to 4,800,000.

15,971. You have had one or two bursts you say—where?—There was a stoppage on our side, and there was a stoppage on the Southwark and Vauxhall's side. Then, making new connexions involved a stoppage of a few hours. All that reduces the average; but on some days we have had, I should estimate, as much as five and a half millions a day.

15,972. (*Mr. De Bock Porter.*) What was the cause of the bursts; was it the increased pressure that was coming into your company's mains?—No, I do not think so. When you lay a new main, you always expect to have a few bursts in it—always. The pipes, in transit, get cracked by shunting operations on the

railways, and if you lay two or three miles of pipes, you are sure to have some three or four bursts.

15,973. (*Mr. Balfour Browne.*) Would that be true of the New River, too, so that you might at one time from the New River have been getting much more than the six millions?—No, that does not apply at all.

15,974. (*Chairman.*) The New River simply passes an extra quantity down the Lea, as I understand?—Yes.

15,975. They allow it to pass their intake, and it comes down to your intake?—Yes. I should like it to be put distinctly to the Commission, that there is no truth whatever in our mains being of less strength than those of any other company; the same foundries make them; they are laid in the same way, probably by the same contractors; the iron is equally good, and there is no reason whatever for assuming that our pipes are not equal to those of any other company—in fact, our experience proves that they are quite as good as those in any other part of England.

15,976. (*Mr. De Bock Porter.*) Is not the pipe tested before it is laid?—Every pipe is tested before it leaves the pipe-founders—every pipe.

15,977. (*Chairman.*) Before it leaves the pipe-founders?—Yes.

15,978. Then it has a railway journey?—You cannot test them in the street. If you were to have a big 20-inch pipe, or a 36-inch pipe, tested in the street, it would be a most difficult process, and it would keep the streets up and closed to the public for an immense time.

15,979. (*Mr. De Bock Porter.*) The risk seems very considerable of their breaking in transit or cracking?—I think about two per mile of large pipes is about the average. You must run that risk.

15,980. Cannot the engineers tell before they put the pipe in whether it is sound or not?—Yes, to a certain extent, but not absolutely. Every pipe before being put in is slung, and they ring it with a hammer. If there is the slightest sound betokening a crack, that pipe is rejected. Every pipe undergoes that process before being lowered into the trench.

15,981. (*Major-General Scott.*) Does the specification lay down that the contractor is to test the pipes before he delivers them?—Certainly.

15,982. At a certain pressure?—The amount of pressure upon each pipe is specified.

15,983. Have you cut out a portion of your district entirely from your own system?—Yes.

15,984. No connexion?—There are connexions by means of valves, but the Southwark and Vauxhall Water has a district of its own on our side of the river.

15,985. (*Chairman.*) Then the last item in your table is the Kent Company's supply, which was also only in the months of September and October this year. The highest amount you got was 206,000 gallons?—Yes.

15,986. Nothing like half a million, therefore?—Not a quarter of a million.

15,987. There, again, we were misled by the figures given us last week. We were told you were getting half a million gallons a day from the Kent?—I do not know who gave that figure. I did not give it.

15,988. (*Mr. De Bock Porter.*) Is it increasing at the present time, or is this 196,000 a fair month?—It is not increasing at all and it cannot increase. It will decrease rather than increase, because the pressure on our side is higher than it was in September. The water that comes from the Kent Company comes through two 4-inch pipes in the Blackwall Tunnel, belonging to the London County Council. A connexion has been made on the Kent side, and also on the East London side. The water from the Kent Company goes into our general district, and as much water as their pressure will allow to come through is taken.

15,989. (*Chairman.*) Now we will come to the figures General Scott has kindly prepared as to the totals of the supplies in those four months of this year. What is the total in the month of July?—Major-General Scott gave the total as 1,393 millions.

(*Chairman.*) No, that was the total of what was delivered. We want to know now the total of what was supplied to you?

(*Mr. Pember.*) The outside supply?

(*Major-General Scott.*) I have got the total contributions so far as I can make them out.

(Chairman.) The total contributions only?

(Major-General Scott.) I mean by that the total delivered to the East London Company from all outside sources.

(Chairman.) Then we will take that, please, from you

(Major-General Scott.) The total in July was 31,403,000; the total in August, 165,726,000; the total in September, 250,920,000; and the total in October, 343,790,000; the grand total being 791,839,000.

15,990. (Chairman.) That is the grand total of your supplies from outside helpers during those four months?—Yes, that is so.

(Major-General Scott.) And the difference between the total supply pumped into the district and the contributions, which represents the supply given from the resources of the company themselves, is 3,916,958,000.

15,991. (Chairman.) Do you admit that figure?—Yes, it is quite right.

15,992. (Major-General Scott.) Of course, we have outside of this account the contributions in November, which are still going on, I suppose?—Yes, they are still going on. I may say, that on referring to my evidence of the 7th November, Question 15,368, I find I gave the contribution from the Kent Company as 200,000 gallons a day.

15,993. (Chairman.) That is about the average of the two months during which they have supplied you?—Yes.

15,994. Is that about as much as the Kent Company can give you?—They can probably give a little more, but the mains through the Blackwall Tunnel will not convey more. There are two small mains of 4-inch diameter, put in by the London County Council, simply for cleansing purposes by means of hose pipes.

15,995. Have you ascertained from the engineers of the Kent Company whether if you put in a sufficient main they could give you more?—They could give us more, but it would necessitate a considerable length of main on their side. It is quite practicable to give us more water by laying mains through the tunnel, and by laying a new main on their side; on our side we have the mains already laid.

15,996. (Mr. De Bock Porter.) Could they have given you more if they increased their pressure?—Very little—the amount would have been quite inappreciable. If they were to double their pressure, we should not get more, perhaps, than about 50,000 gallons a day.

15,997. (Chairman.) Perhaps we had better ask the engineer of the Kent Company that question, and I will not trouble you with it. I have already asked you, I think, about your storage reservoirs; they were, practically, at the end of September reduced very low?—They were.

15,998. How long did this drought last which has resulted in what has been called the Water Famine of this year?—The drought commenced about 16 months ago. I am speaking of the drought as commencing when the flow of the River Lea became very small indeed. The flow of the River Lea began to fall off in June of last year, and since then the flow of the river has been very small indeed. Even in January of this year it was only 48 million gallons a day, and in February it was only 26 millions; in March it was nearly 32 millions, in April it was 19 millions, in May 23 millions, in June 19 millions, in July 12 millions, in August 6 millions, in September 2 millions, and in October, I think, it was nearly 5 millions.

15,999. Then, according to the figures you have just given us, you were taking nearly the whole of the supply of the Lea in July when, as you say, you took 9 millions?—In July, 12 millions were flowing over Fielde's Weir, but what flows over Fielde's Weir does not all belong to the East London Company—the navigation has to be kept up.

16,000. Just now you gave your figure for July as nine millions, I think?—The nine millions was what this company had available from the River Lea. Over Fielde's Weir, which is the gauging point, 12·7 million gallons passed, and out of that 12·7 millions the navigation had to be kept to its proper head, the River Lea Navigation having a prior right to all the water before the East London.

16,001. Wait a minute. I understood, certainly, that you were giving us the figures of the total flow of the Lea during those months, but that is not so?—The

figure I have just given you is the total flow over Fielde's Weir. Mr. W. B. Bryan.

16,002. (Major-General Scott.) What did you give for July?—Twelve millions. 14 Nov. '98

16,003. My figure is not quite the same as yours?—If I give you the decimals, the two figures will be exactly the same.

16,004. I derive from your return a different figure for July. You were good enough to send me some figures, as you will remember?—Yes, I think my figure is the same as yours.

16,005. For July I have got 13·9 millions?—That includes the amount taken from the New River Company.

16,006. Yes, but then that is the gauged water?—Yes; but some confusion may arise unless we are perfectly clear about this. The flow of water over Fielde's Weir available for the East London Company without purchasing from the New River was 12·9 million gallons; we purchased 1·013 thousand from the New River, making a total of 13·9 millions.

16,007. (Major-General Scott.) But then one must take the plain meaning, I think, of the heading of the column, "Average Daily Discharge at Fielde's Weir," in the table handed in at Question 15,324; that means the quantity of water which is going over that weir, and which is gauged. The average daily abstraction by the New River Company is in the next column, and that one may deduct from their 22½, and thus get a figure for what they send down to you; but I think that this first column, which is headed "Average Daily Discharge at the Weir," must include everything?—I think, if we take it that way, great confusion is apt to arise in comparing the flow of the river over Fielde's Weir with that of previous years, because, supposing the New River had taken nothing for the past four months, and allowed their 22½ millions to flow over Fielde's Weir, then we should have had a fictitious amount of water going over Fielde's Weir as compared with anything in past years. It would have been almost impossible then to have made any comparisons with previous years.

16,008. (Chairman.) You have confused my mind by sometimes saying that is the gauging of the whole flow of the Lea, and sometimes saying that is the gauging of so much of the flow of the Lea as is available for the East London Company—which do you mean by those figures?—I think the difficulty has arisen by referring to the table I have just handed in, which states the amount of water—

16,009. I asked you what was the total flow of the Lea in those four months?—I could not give it you unless I add the New River's to it.

16,010. (Mr. De Bock Porter.) Is there a fixed quantity required for navigation purposes?—No, it varies according to the traffic.

16,011. Is that determined from time to time by the Lea Conservancy people?—Yes. They have certain quantities secured to them by the River Lea Water Act, 1855.

16,012. Then they have the first call?—They have.

(Chairman.) My object in putting the questions to you that I did was to ascertain how much of the whole flow of the river Lea you had taken; if you do not give me the whole flow of the Lea during those months, I have missed my object.

(Lord Robert Cecil.) The whole flow of the Lea for July, August, and September is given in column 3 of the table handed in at Question 15,324.

16,013. (Chairman to witness.) Does the first column in that table represent the total volume of water in the River Lea at Fielde's Weir?—Yes, it does.

(Mr. Balfour Browne.) It agrees with what Mr. Bryan has just given us up to a certain point, and then it differs.

(Witness.) It differs from the point where the New River allowed water to pass down for the benefit of the East London Company.

16,014. (Chairman.) Does the 13·9 which is put down in the table for the month of July 1898, include what the New River allowed to pass down for your benefit?—It does.

16,015. Then, of the 13·9, you took 9½ roughly?—We did.

(Chairman.) You took 9½ths.

Mr. W. B. (Major-General Scott.) What became of the rest of it?
 Bryan. (Lord Robert Cecil.) It is more than that; you leave
 out the New River, and they took 10½.

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(Chairman.) The East London took $\frac{2}{3}$ ths of what the New River Company had left.

(Witness.) The difference is made up by that required for navigation and by evaporation. The Lea Conservancy have a prior right to take all water up to the amount secured to them by Parliament before we get it.

16,016. (Chairman.) Throughout those four months of drought—July, August, September and October—did the navigation get their statutory quantity?—They took what they wanted—I do not know how much—I should think they did not take their statutory quantity, because they never do take it.

16,017. Did you pump up any water from the Thames into the lower reaches during those months?—We did.

16,018. How much?—We cannot tell you how much because it is impossible to gauge it. We pumped up as much as left the navigation to its proper head level; there is a certain head level required by the Acts of Parliament.

16,019. (Mr. Balfour Browne.) Where did you pump it from, may I ask?—We pumped first from Bromley Lock.

16,020. (Chairman.) Where is Bromley Lock?—Bromley Lock is on the old River Lea about a mile and a half from the Thames. At Bromley Lock there are tide gates which open into the Limehouse Cut of the Lea Navigation. At each tide we pump from the old natural course of the river into the Limehouse Cut, which is locked at a higher level than the other.

16,021. Is that water that has come from the tidal action of the Thames?—Yes.

16,022. So that you have practically been pumping the Thames water into the Lea to meet the demands of the navigation?—Yes, when the tide is sufficiently high, it flows into the Limehouse Cut naturally, when the tides are low it does not. We have pumped that water into the Limehouse Cut. But I should like to put it quite clearly before you, that none of this water that is pumped into the Lea is pumped into the upper reaches from which the East London takes its supply.

(Chairman.) No, I quite understand that.

16,023. (Mr. Pope.) And it comes back again to the Thames; it simply circulates?—It simply flows back again according to the amount of barge traffic on the river; it simply circulates.

16,024. (Chairman.) Do you mean that the same water that has been pumped up one day, and runs down the Lea, is pumped up again?—Not exactly that, because we always pump from the tideway, and what we pump into the Limehouse Cut has a great many outlets in the old River Lea. The Limehouse Cut enters the Thames direct through a lock. It also enters what is called the Bow Creek through tide gates, and whatever way the traffic comes, so the water has to go with it. If a barge goes through the Limehouse Lock, a lock-full of water goes into the Thames at that point. If it passes out at Stratford into the various sections of the old river, then the water flows that way—exactly according to the traffic.

16,025. Then there is no flushing of the Lea by any flow of water from the higher parts?—This is all canalized; there is never any flush where it is canalized.

16,026. (Mr. De Bock Porter.) But in ordinary times a certain amount of water must come down the Lea?—It does not go down the Limehouse Cut; it goes into the old back rivers.

16,027. But if you had not pumped this water back, the navigation could not have been carried on?—No, it could not.

16,028. (Chairman.) In fact, the Lea has got into a highly artificial state?—The canalized portion is entirely an artificial river. You cannot possibly have a flow of water through all these locks except by the traffic passing through it.

16,029. (Mr. Pember.) Of course, we are entitled to do that by statute?—Clearly so; there is a special clause in the River Lea Act, 1855, which bears upon that point.

16,030. (Mr. Balfour Browne.) I thought your obligation by statute was to send water down; you send it up?—No.

(Mr. Pope.) That is another obligation, Mr. Balfour Browne, and is not in reference to this pumping part of the question.

(Mr. Balfour Browne.) I forget what the section is.

(Mr. Pember.) I think it is Section 31: "The two companies may from time to time, if they think fit, subject to the provisions of this Act, furnish to the trustees all or any part of the quantities reserved to them"—that is for the navigation—"by pumping water at the expense of the two companies from any one pond of the navigation to any other pond thereof so that they do not thereby reduce the level of any such pond below the customary head level from time to time." In fact, it really comes to this, my Lord—that a certain amount of water coming down the Lea, is, in the first instance, set apart for navigation; but they may set that amount of water free for the purposes of the consumption of London if they pump from one pond to the other a corresponding amount of water from the tidal waters of the Thames, and if they call in that to redress the balance.

(Mr. Balfour Browne.) This is pumping, not from one pond to another, but from the tideway into the canal.

(Mr. Pope.) Yes, clearly.

16,031. (Mr. De Bock Porter.) Has this ever been done before?—Yes.

16,032. Often?—Twice before.

16,033. For any lengthened time?—For about five weeks in 1896.

16,034. Then it is only in recent times it has been done?—Only in recent times.

16,035. Was any taken in 1893, which was a year of drought?—No, we gave a constant supply the whole of 1893.

16,036. (Chairman.) Have you any precedent for such a drought as you had last year and this?—We have not for this year's drought.

16,037. You said it began in the autumn of last year?—Yes, it did. We have no records whatever to show that there has been any other drought like this in intensity and duration.

16,038. Is there not one year in which the average flow of the Lea was only 61,100,000?—If you can give me the year, perhaps I can tell you.

(Chairman.) That is just what I cannot give you, I want to get it from you.

16,039. (Major-General Scott.) I think you will find it in the evidence of the engineer of the New River Company before Lord Balfour's Commission, or in one of the tables put into that Commission. I think an average daily flow of the Lea of 61,100,000 is mentioned, and that is the lowest that I have been able to find. It is in a table put in by Mr. Francis for the New River Company?—I will look that up to see if it be so.

(Major-General Scott.) It is given as an average of 61,100,000 daily flow for the whole year.

(Mr. Pember.) I am told that was in the year 1864.

(Major-General Scott.) I think that is the lowest I have seen anywhere.

(Mr. Balfour Browne.) I think there was evidence given before the Duke of Richmond's Commission by the engineer to the East London Company, both with regard to the year 1864, and with regard to the year 1858. He said of the year 1858: "The winter of 1858 went off without a single flood. We had charge of the flood gates ourselves on Lea Bridge, which governed the whole flow and in the winter of 1858 we did not draw a single gate. Therefore, where we would the reservoirs be filled from in such a season?" I see Mr. Greaves gave evidence about that in 1867, but he did not give the actual quantity. He says, practically, they took the whole water.

(Chairman.) It is much lower.

(Major-General Scott.) Yes, that is the lowest, I believe, that is previously recorded, which means that this year is very much lower. I cannot find anything lower.

16,040. (Chairman.) The natural discharge of the Lea this year is very much lower even than that figure of 61 million odd?—I believe it is.

16,041. It is on page 2 of the Appendix to Lord Balfour's Commission that the figure of 61 million is given. The average daily discharge of the Lea,

therefore, this year is lower than the lowest previously recorded?—Yes it is.

16,042. (*Mr. De Bock Porter.*) Has the discharge from the wells in the same area in the neighbourhood of the Lea been reduced in the same proportion?—That is a question I can scarcely answer. In 1867, or 1864, I think it was, the East London Company had no wells at all, now we have a number of wells and we have found no diminution whatever in their yield at the present moment over the yield at the commencement of the drought.

16,043. (*Chairman.*) Not only no diminution, but you have been getting an increased quantity from your wells?—We have.

16,044. Do you see any connexion between the increased supply you have got from your wells and the diminished flow of the Lea?—None, and for this reason, my Company's wells are situated at the lower end of the valley and we take what water is flowing underground and is running to waste.

16,045. You do not know where it is running?—It is running somewhere, but we do not know where it is running to. In September we had to stop the pumping in our Lea Bridge well, which is the most southern well that we have, so as to draw the buckets and to repack them; the water rose rapidly, and remained 120 feet higher than the water at an adjoining well within three-quarters of a mile.

16,046. (*Mr. De Bock Porter.*) Has that well been recently sunk?—No, we commenced it in 1886 and have been working at it ever since.

16,047. Gradually deepening it?—No, gradually extending the headings. Over the whole of my Company's district, where their wells are sunk, there is a thick bed of the London clay, and consequently none of the surface wells lying above the London clay can be interfered with by any pumping that we do.

16,048. (*Chairman.*) Just to finish the subject of this drought, did you find that the lack of means of storage in your district aggravated the hardship?—Very much.

16,049. Have the cisterns been removed generally in your district or not?—In many parts of the district they have been removed generally; in the better class districts and in the country they have not been removed, and in those districts no difficulties or hardships have been experienced whatever.

16,050. (*Mr. De Bock Porter.*) But that is hardly so, is it? I have understood that where there are cisterns in the houses they have not been filled, and I think you admitted at the beginning of your examination to-day that owing to the water that is taken out straight from the mains it does not rise sufficiently high to fill the cisterns?—I do not admit that generally, I may admit it in one or two isolated cases; but wherever we have had any complaints sent in, we have inquired into them, and in most cases we have found that the difficulties have arisen entirely on their own premises. But generally, as I say, it is not so.

16,051. Are there not at the present time roads and streets in which they cannot have baths because the supply is not sufficient?—I have no complaints to that effect, I have had none for weeks.

16,052. (*Chairman.*) But did you have some weeks ago?—At the commencement of the turning off—of the reversion to the intermittent supply—we had a great number of complaints.

16,053. Did the company acquiesce in the removal of the cisterns?—No.

16,054. Have you any power to order cisterns to be put?—That is a very difficult question. I believe there is a clause in one of my Company's Acts which says that cisterns are to be fixed, but it does not specify the size of the cistern or the character of it. The consequence has been that, to comply with this clause, in some cases cisterns about as big as a hat have been put in. In many cases, especially in some portions of our Essex district, a builder will put in one cistern, he will apply for the water to be laid on, the water is laid on, and a day later he will remove that cistern and take it into the next house, and that one cistern has done duty for a whole row of houses.

(*Chairman.*) Does not the cistern come among fittings with respect to which you are empowered to make regulations?

(*Mr. Pember.*) No.

(*Witness.*) I think not.

16,055. (*Chairman.*) Cannot you prevent such a transparent fraud as that of a cistern travelling along a whole row of houses and doing duty for them all?—There are very great difficulties in the way of getting a conviction against a person doing that. We have had the cases before our legal advisers many times, and there is some difficulty in preventing it.

(*Mr. Balfour Browne.*) It is only fair to say that there is a contention, my Lord, that the cistern does fall within the fittings that the Company can require; but that may possibly come before another Court to be determined before long. I believe it is before the Railway Commissioners now, and I do not like to say how it would be decided.

(*Chairman.*) Quite so, and, of course, I am not expressing the least opinion, I am only enquiring so far as I can.

(*Mr. Balfour Browne.*) That is the contention.

(*Mr. Pope.*) It is a doubtful point.

(*Mr. Balfour Browne.*) Yes, it is.

16,056. (*Chairman to witness.*) Have your Company felt that they could remedy this lack of cisterns at all?—We have tried all we possibly can to get it remedied, and we refuse to lay on any house without a cistern. When the house is once laid on, if the cistern be removed surreptitiously, we are powerless in the matter; but we refuse to lay on any house whatever without a cistern.

16,057. (*Major-General Scott.*) Can you cut off a house that has not got a cistern?—I should rather like that to be asked of our legal advisers, it is rather a difficult point.

(*Mr. Pember.*) I had better read you the clause, it is very short, and then you will see what the Act says: "Whenever water is constantly laid on under pressure in any district main, every person supplied with water under pressure by the Company through such main shall, when required by the Company, provide a proper cistern or other receptacle for the water with which he is so supplied, with an efficient ball-cock or other like application."

(*Chairman.*) Where is that from?

(*Mr. Pember.*) That is from the East London Waterworks Act, 1853. I believe there is no such clause affecting any other company.

(*Mr. Rickards.*) Yes, we have an exactly similar clause in the Chelsea Act of 1852.

16,058. (*Chairman.*) I have heard that clause read at least once. It seems you have power to enforce a cistern so long as you have constant supply?—We do require them in the first instance, but a good many cisterns have been removed at the instance of the sanitary authorities, and we do not get to know that these cisterns are removed. Under the regulations made by the Board of Trade, in the case of any alterations to the fittings, notice must be given to the Company, but no notice is given to the Company in these cases, and it puts us in rather a difficulty in finding out who would be the proper party to proceed against. The reason given by many of the local authorities has been that the cisterns are not kept clean that they have no covers to them, and that dust and filth gets into the cisterns and puts them into an insanitary condition. There is no difficulty at all, however, in having a proper cistern closed and with a circular bottom which would always keep perfectly clean.

(*Chairman.*) It is in your power, according to that clause as I understand it, to refuse to supply unless there is a properly covered cistern.

(*Mr. Pember.*) I cannot find any such clause.

(*Chairman.*) It says they may insist upon a cistern.

(*Mr. Pember.*) Yes.

(*Chairman.*) A cistern means a proper cistern.

(*Mr. Pember.*) Yes, and the term is "proper cistern."

(*Chairman.*) Well?

(*Mr. Pember.*) But I see no sanction for that clause, I see no remedy such as you suggested, my Lord, of cutting off the water or withholding the water supply or anything of that sort. There is no penalty.

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Mr. W. B. Bryan. (*Chairman.*) Surely, as you read it, they may require a proper cistern to be put.

14 Nov. '98 (*Mr. Pember.*) They may require it, yes, "whenever water is constantly laid on"—it does not say before water is constantly laid on, but whenever it is constantly laid on—"every person supplied with water"—he must be first supplied—you will see it is antecedent—"shall" when required by the Company provide a proper "cistern or other receptacle." On looking through the subsequent clauses of the Act, I cannot find at present any remedy—I do not know whether there is any—for the non-supply of a cistern.

(*Major-General Scott.*) Is there not in the Act of 1871 some clause or clauses giving the Company power to refuse to supply if a house is not provided with proper fittings.

(*Mr. Balfour Browne.*) Yes, there is.

(*Mr. Pope.*) In the interpretation clause in the Act of 1871, fittings expressly includes cisterns.

(*Mr. Balfour Browne.*) It does.

(*Mr. Pope.*) There is no doubt of that.

(*Mr. Pember.*) In the regulations by the Board of Trade there is no regulation that there shall be a cistern; all that the regulation says is that every cistern used in connexion with the water shall be made in a certain way, but it does not say that there shall be a cistern.

(*Chairman.*) No, but the Act of Parliament says that the Company may require a proper cistern.

(*Mr. Pember.*) I know; but then the Act of Parliament which says that the Company shall require a proper cistern, as far as I can see, does not give any remedy to the Company if that proper cistern is not put.

(*Mr. Balfour Browne.*) If you read the Act of 1871 as Mr. Pope has read it just now, you will see that they need not give a supply unless there are proper fittings, and amongst fittings is mentioned cisterns.

(*Mr. Pope.*) And by a section of the Act of 1852, "it shall be lawful for the Company from time to time, with the approval of the Board of Trade, to make such regulations as shall be necessary or expedient for the purpose of preventing the waste or mis-use of water, and therein, amongst other things, to prescribe the size, nature, and strength of the pipes, cocks, cisterns, and other apparatus." No doubt it is a very clumsy roundabout way of doing it, and it is a question that has to be determined.

(*Major-General Scott.*) Mr. Pope, the Committee that sat on the question of the regulations would not allow the companies to insert a provision providing for cisterns. I think that was so—was it not? The regulations that you mentioned just now do not contain any description or injunction to provide cisterns.

(*Mr. Pope.*) No, it leaves untouched the obligation to provide the cistern, but the regulation says that the size and strength of the cistern, if it is provided, is left to the Company and the Board of Trade. That which seems to be wanting is a power to enforce the obligation of the section in the East London Act, which is simply that each person who is supplied shall have a cistern; there appears to be wanting any power upon the part of the Company to enforce that obligation as against the person who ought to discharge it.

(*Mr. Rickards.*) Would you allow me to call your attention to the Chelsea Waterworks Act, which is just in the same terms as regards the provision of a cistern as a condition precedent to constant supply as the East London Waterworks Act itself; but I see that a subsequent section of the Chelsea Waterworks Act, 1852, provides this: "That if any person supplied with water by the Company shall wilfully do or cause to be done any act, matter, or thing in contravention of the provisions of this Act, or of any Act incorporated therewith, or shall wilfully omit or neglect to do any matter or thing which under such provisions ought to be done for the prevention of the waste, misuse, or undue consumption, or the contamination of the water of the Company, it shall be lawful for the Company to turn off the water supplied by them to such person."

(*Mr. Pope.*) If you notice that, that is limited to cisterns available for the prevention of waste.

(*Mr. Pember.*) Quite so.

(*Mr. Pope.*) It does not include cisterns for the purpose of storage, which is a different thing.

(*Mr. Rickards.*) I am not sure.

(*Mr. Pope.*) At all events, my friend Mr. Balfour Browne says, and it appears to me that he has very fairly put it, that it is at least a question of such doubt that it is now left by some proceedings which have been taken to be decided by the authority which is appointed by Parliament for that purpose.

(*Mr. Balfour Browne.*) Perhaps it is not very fair to put a question to Mr. Bryan upon it, because his company is the defendant company in that action.

(*Chairman.*) Do you mean that this question of whether the company has the right to insist upon cisterns is now *sub judice*?

(*Mr. Balfour Browne.*) It is, my Lord.

16,059. (*Chairman.*) Very well. I was not intending to lay any blame against your company, Mr. Bryan; I only wanted to see whether they had any means of remedying this lack of cisterns or not, that is all. At any rate, there is a lack of cisterns, whoever is in fault, and we know you have taken a number of precautions—you have put up stand-pipes and you have provided jars and sent round water carts, and so on?—Yes, we have.

16,060. The Company have done their best to mitigate the inconveniences of this drought?—We have done everything we possibly could to mitigate the inconvenience which naturally must arise from the suspension of the constant supply.

16,061. (*Mr. De Bock Porter.*) Have you formed any idea of the time when you will be able to resume a proper supply of water?—No, I have not. It depends upon the flow of the river. I am sorry to say the flow of the River Lea is very minute at the present time, but I am also very glad to be able to say that we have increased the amount of water in store very considerably in the last month. I think it is wise to husband that store in case of severe frosts coming; but our position is very much better than it was a month ago.

16,062. Then you see no immediate prospect of resuming a constant supply?—No. I think that when rain comes the ground is so saturated now, that we shall have an increased flow in the river. The rains of a few weeks ago were all absorbed or as nearly as possible absorbed.

16,063. (*Chairman.*) Now let us come to how you propose to maintain your supply in the coming year—that is, in 1899. You have prepared a Table of the supply that you look for in 1899, I believe?—Yes.

The Witness handed in the following Table:—

EAST LONDON WATERWORKS COMPANY.

Table 2.

Supplies in 1899.

Source from which water taken.	Gallons to be pumped in the District daily on the Average.			
	July.	August.	September.	October.
1. River Lea	10,000,000	6,000,000	1,000,000	4,000,000
2. River Thames and wells.	24,000,000	24,000,000	24,000,000	24,000,000
3. Storage reservoirs	Nil	3,000,000	7,000,000	2,000,000
4. New River Company, and during August, September, and October, with the assistance of the Grand Junction and West Middlesex Companies.	6,000,000	6,000,000	6,000,000	6,000,000
5. Southwark and Vauxhall Company.	6,000,000	6,000,000	6,000,000	6,000,000
Total pumped into district	46,000,000	45,000,000	44,000,000	42,000,000

16,064. (*Chairman.*) As that table will be put upon the notes, I need not take you through all the figures. I will only ask you one or two questions which occur to me upon it. I see you estimate your supply from the River Lea at only 10 million gallons a day in July; six millions in August, one million in September, and four millions in October?—I have followed the available volumes we have had this year.

16,065. The available volumes?—As nearly as possible.

16,066. Then to that we must add what you have estimated from your storage reservoirs—

(*Mr. Balfour Browne.*) He takes next, the River Thames and wells.

16,067. (*Chairman.*) I know that, but I have learnt that the storage reservoirs are filled from the Lea; therefore, those two items represent the total supplies he calculates upon from the Lea. (*To Witness.*) I see you estimate nothing to be taken from your storage reservoirs in July next?—Yes, that is so.

16,068. Three millions in August, seven millions in September, and two millions in October?—Yes.

16,069. Adding that to the gallons to be pumped from the River Lea in those four months, one gets amounts very much short of what you have usually drawn from the Lea?—Very much short indeed.

16,070. Do you think it prudent to estimate only those small quantities, in view of the present lowness of the river?—Yes. I think it prudent, as this year has been a record year, to take what our experience of this year has taught us has been the available water. I think it would not have been prudent if I had estimated that we could get much more from the River Lea than we have done this year.

16,071. Now, taking your second item, namely, the River Thames and wells, you forecast that you can get 24 million gallons a day from those two sources combined, throughout the months of July, August, September, and October next?—Yes, I do.

16,072. Can you separate that into River Thames and wells?—Yes, 12 millions each.

16,073. You are not entitled to take more than 10 millions from the Thames?—But we have springs at Hanworth, about two miles from the Thames.

16,074. That is not from the Thames?—But it comes through the Thames main, and we have only one means of getting it to London. We take it through the Thames main, and that is not included in the 12 millions from the wells in the Lea Valley.

16,075. Do you mean that you expect to pump your full 10 millions from the Thames during those four months of next year?—We do.

16,076. And you draw two millions—?—From our Hanworth springs.

16,077. Which are in the Thames Valley?—Yes.

16,078. You have never been able to pump more than 7½ millions from the Thames in the past?—We have pumped 10 millions. To make the figures quite clear: we always pump from our Hanworth springs, as the water is of such very excellent quality, and we take approximately two million gallons a day, and then we take the balance from the Thames, the main not being able to convey at the present time more than 10 millions.

16,079. The difficulty I have in my mind is, that I see you took from the Thames, in 1897, less than 5½ millions; in 1896, less than 7½ millions; in 1895, a little over 7 millions; and in 1894, not quite 6 millions. How can you reasonably hope to get your full 10 million gallons next year?—We are taking it now. We did not take it in the past, because we did not want it.

16,080. Do you mean that your pumps and your mains are sufficient to pump your 10 millions daily?—Certainly; but to get the extra two millions a day through, it will be necessary to cut the main in two, by arrangement with the Grand Junction Company, to pump the water from Hanworth into the Campden Hill Reservoirs, and for the Grand Junction Company to pump it again into our reservoir in Finsbury Park. By that means we shall be enabled to get about two million gallons a day more through this main than we can at the present time.

16,081. Now you calculate upon or speculate upon 12 millions, you say, from your wells?—Yes.

16,082. That, again, is a quantity far larger than you have ever got hitherto?—We have been pumping for some time past now from 10 to 11 millions. We have a number of wells in course of construction, and some of these wells have not had engine power to enable us to bring their full yield to the surface. While they have been under construction, up to last year, we had to take a very much less volume of water; now we

have most of them with permanent pumps in, and we have been enabled to pump the full 10 millions a day throughout this drought, except in July—I think it was less in July.

16,083. (*Mr. Balfour Browne.*) You gave the figures, and the highest that existed in August was 9.55?—Yes, but I have explained that we make a deduction from that for the slip of the pumps.

16,084. You will still have to do that?—Yes, we shall, but, since August, we have obtained more pumping power, new engines are erected, and we shall be able to get the full yield of the wells.

16,085. (*Chairman.*) And, therefore, you say, 12 millions is not unreasonable?—It is not unreasonable. I have put it very low. My opinion is that it will be more than that, but I have kept on the safe side.

16,086. (*Mr. De Bock Porter.*) The Thames and the wells are giving you this year five millions more than you have been getting in the past on the average?—We have been pumping at times fully 11 millions during the autumn, and as I explained before we have to stop every now and then, and that has brought the average down.

16,087. (*Chairman.*) You have been pumping fully 11 millions from your wells?—From our chalk wells in the valley of the Lea for weeks together; then, sometimes, we have a stoppage to pack the buckets, to draw the buckets, and so on, and that reduces the average to the figures I have given you.

16,088. Those causes will operate next year just as they have done this year?—No, for this reason; that we have erected additional engines this autumn which are not yet put in work. In every well we are proposing to have a duplicate engine, so that when one set of pumps have to be overhauled the other set of pumps are available. By that means we shall get the full supply that I estimate at 12 millions.

16,089. Then you count, during July, August, September, and October next year, upon still getting the six million gallons daily from the New River Company?—From the New River Company, with the assistance of the Grand Junction and the West Middlesex Companies.

16,090. By that connexion in Oxford Street, do you say?—The connexion is made and in use.

16,091. That is the one in Oxford Street or near Oxford Street?—Yes.

16,092. You reckon upon six millions from the Southwark and Vauxhall Company, do you, throughout those four months?—Yes.

16,093. What storage will you have, say, at the beginning of July next year?—I have estimated it at the same figure as this year with the reservoirs full—1,200 million gallons.

16,094. (*Major-General Scott.*) If your reservoirs had been empty on the 1st of January, 1898, would you have been able to fill them this year?—No, we should not have been able to quite fill them if they had been empty on the 1st of January.

16,095. (*Mr. Pember.*) Because, then, you would not have had the benefit of the autumn rain?—That is so. In the last three months of last year the rainfall was exceedingly deficient, and, consequently, the flow of the Lea in January, February, and March this year was exceedingly low.

16,096. (*Chairman.*) On what months could you have drawn anything into the reservoir—I mean anything in excess of what you took out?—We could have taken at least 500 millions in January into store.

16,097. And in February?—In February we could have taken perhaps 80 or 90 millions; in March we could have taken 80 or 90; in April, none; in May, none; and in June, none.

16,098. (*Mr. De Bock Porter.*) What prospect is there of your being able to fill your reservoirs this year?—If we have no rain, we shall not be able to fill them; if we have a moderate amount of rain, we shall.

16,099. But you want all your increased supplies, do you not, to supply your customers?—Yes, but we could do that by purchase from the other companies until our reservoirs are full.

16,100. (*Chairman.*) At any rate, if you are to avoid another failure of supply next year, you must be able to fill your reservoirs by the end of July?—Yes, or, at any rate, to have at least 700 million in store.

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Mr. W. B. Bryan. 16,101. Then, in August, you have calculated or estimated to take three million gallons a day from your reservoirs; that will be a total of 93 million gallons taken out of your reservoirs in August?—Yes.

16,102. And will leave you a balance at the end of August of 1,107 million gallons only?—Yes.

16,103. Then, in September you will take out 210 million gallons?—Yes.

16,104. Reducing your reservoirs to 897 million gallons?—Yes.

16,105. And in October you will take 62 million gallons?—Yes.

16,106. So that at the end of October next year you will only have 835 million gallons on the assumption that you are quite full at the end of July?—Yes. If we are 500 million gallons short at the end of July, naturally, we shall be 500 millions to the bad in October.

(*Mr. Pember.*) No.

(*Mr. Littler.*) *Pro tanto* to the bad.

16,107. (*Mr. Pope.*) You would still have 335 million remaining in store?—We should have 335 million still remaining in store. I have expressed myself badly.

16,108. (*Chairman.*) Before we leave the total of supplies which you look for in 1899, could you give us the totals that will be obtained in those four months of July, August, September, and October, 1899; perhaps again General Scott will kindly help us?—Obtained from the Lea or from all sources?

16,109. From all sources?—Of course, this is only an estimate depending upon Providence and the weather.

16,110. I can see that; they should be called provisional totals, then?—I could soon work this out if you give me a moment.

(*Major-General Scott.*) Perhaps I could save you the trouble. Subject to correction afterwards, the total in July is 1,426 millions; in August, 1,395 millions; in September, 1,320 millions; and in October, 1,302 millions, making a grand total of 5,443 millions. Deducting from the 5,443 millions, the total quantity supplied in similar months this year from the resources of the East London Company, there remains a deficiency of 1,526,042,000 gallons, and that divided over 123 days contained in those four months, July to October, gives an average deficiency of 12,406,830 gallons per day.

16,111. (*Chairman.*) That exceeds your daily expected help from the New River Company and the Southwark and Vauxhall Company?—It is about the same.

16,112. No, it is not the same; there is no question of "about." It is more?—I have not put in the Kent Company here; as it was such a small amount, I thought it was not worth while putting in.

16,113. The deficiency will be 12,406,830 gallons per day?—For the 123 days, assuming that General Scott's figures are correct, that means that we must deplete our reservoirs by 50 million gallons more. That is the only effect it would have.

16,114. Or get more water from the Kent and the New River?—Yes. I think the amount in our reservoirs would be quite sufficient to balance any little contingency or error of calculation like that—I mean error on my part.

16,115. (*Major-General Scott.*) I am quite willing to allow that there may be an error on mine?—Of course, in going through these figures, all my figures have been taken in round numbers; I have not taken them to hundreds of thousands.

16,116. (*Mr. De Bock Porter.*) You really would be filling your reservoirs, would you not, at the expense of your consumers—you are withholding from your consumers now in order that you may fill the reservoirs for next year?—To some extent. We are doing it for their benefit as trustees.

16,117. Yes, but at their expense as regards comfort, at any rate?—No, I do not think so. One must be prudent in these matters, and if we were to extend the time of supply from to-day, say, two or three hours a day, at the expense of the four or five million gallons going into our reservoirs, we might, in a month's time, if a frost came, be in a very different position indeed. Therefore, in my opinion, it is absolutely necessary, in view of winter coming on, to have a certain amount in store to make up for the excessive consumption which always commences when frosts come.

16,118. But the consumers are foregoing what they are entitled to at the present time in order that you may make this provision for them in the event of frost?—Yes, it may be so, looking at it from your point of view, but I think, from my point of view, that I am doing the best.

16,119. (*Chairman.*) But from the consumer's point of view?—I am doing much better for the consumer than letting him have all his water, or two or three hours extra water now, and perhaps in a month or six weeks' time have greater restrictions than the consumer is put to at the present moment.

16,120. (*Mr. De Bock Porter.*) But, still, the consumer continues to pay for his full quota of water?—I suppose he does.

(*Chairman.*) There is no doubt he does. He pays for the full constant supply, and you are condemning him for months to an intermittent supply.

(*Mr. Pember.*) He is not entitled to a constant supply if there is drought.

(*Chairman.*) There is no drought at this moment.

(*Witness.*) There is a great drought in the river, my Lord, at this moment—there is no water.

(*Mr. Pember.*) There is a very serious drought. They are prevented by drought, even if the drought were over at the present moment, but it is not.

(*Chairman.*) It strikes one as a *casus omissus* in the Act that there should not be a stoppage of the rates when there is a stoppage of the supplies.

(*Mr. Pember.*) I do not know; that would make one party pay for the default of Providence, and not the other.

(*Witness.*) I do not think the volume of water we are getting into store day by day would be sufficient for more than half-an-hour's extended supply twice a day.

After a short adjournment.

16,121. (*Mr. Pember.*) There is a point which I would venture to suggest with regard to the possibility of filling reservoirs. I do not know whether Mr. Bryan has got them here, but he could, perhaps, give some figures as to what the amount of water coming down the Lea in flood time is, so that you might know how many floods in the course of a winter would be necessary to fill his reservoirs.

(*Chairman.*) You may as well tell us that, supposing you had got a flood.

(*Witness.*) Floods vary very much. I have known as much as 1,400 million gallons a day to come over Fielde's Weir. So that one day's flood is quite sufficient at times to fill the whole of our storage reservoirs.

16,121a. (*Mr. De Bock Porter.*) But you cannot take the flood water, can you?—No, we do not take it in. We wait till the greater part of a flood is over, and as soon as the water becomes clear, then we take it in.

16,122. (*Chairman.*) Then what guide does the flood volume afford us if you cannot take it? It is merely misleading?—We have an officer stationed on the spot at the intake, and as soon as the water becomes sufficiently good, in his judgment, to be admitted to the reservoirs, he takes it.

(*Chairman.*) But then what is the use of telling us that a large flood amounts to 1,400 million gallons a day, if you cannot take it? It is a figure that is of no value whatever.

16,123. (*Mr. Pember.*) How much could you take of the 1,400 millions?—Our intakes would not admit of more than about 150 million, perhaps, or 200 millions, being taken in. They are not of sufficient capacity; but I think the learned counsel simply asked this to show that in a flood time there was an enormous volume of water which might be made available, and which in the future will probably be made available.

16,124. (*Chairman.*) Now, before we part entirely from your tables, you have assumed that certain quantities will be wanted in July, August, September, and October of next year for the constant supply?—Yes.

16,125. What increase of population in your district do you reckon upon for those months?—We are increasing at the present time at the rate of about 25,000 additional population every year.

See 16,2

16,126. You have allowed, have you, for that additional 25,000?—Yes, I have allowed for that, at 30 gallons per head per day; it is three-quarters of a million a day—that is, about.

16,127. (*Major-General Scott.*) The increase last year was 29,000 odd, was it not?—The increase of population?

16,128. Yes?—As to the increase of population, I do not remember the exact figure, but it is somewhere between 25,000 and 28,000, I think. It varies very much according to the building trade.

16,129. (*Mr. De Bock Porter.*) Just now there is a boom in the building trade, is there not?—A very great boom indeed.

16,130. So that the population may increase rather rapidly?—It may go up to 30,000 in the 12 months ending next July; but, of course, that is a figure that I cannot estimate correctly.

16,131. (*Chairman.*) But it is a contingency that we must bear in our minds, and every year you may have a similar increase; so that if your difficulties go on after 1899 you will want increased quantities?—Yes; but I should like to point out that the volume of water we took in the year 1897 was no greater than that in the year 1891, from the means adopted by the company to prevent underground waste.

16,132. You attribute the fact that you did not have to supply more in 1897 than you had to supply in 1891, to the fact that you prevented waste?—Yes.

16,133. Because you had run up to 48 million gallons daily supply in 1895, I see?—That was due entirely to the frost.

16,134. That was the frost?—We were pumping as much as 70 million odd gallons a day during the worst part of the frost.

16,135. Then I do not want to say anything that is disagreeable to you, but the result of your evidence so far is, that your company has neglected to provide the storage that was necessary for its increased daily supply?—I think that is quite capable of explanation.

16,136. I should like to hear your explanation?—It is this: In the year 1890 we purchased a considerable amount of land for new reservoirs; immediately we had secured the land we went to Parliament. Our Bill was thrown out on second reading by the London County Council.

(*Mr. Balfour Browne.*) Please do not say that. That is a matter, my Lord, you distinctly ruled you would not go into, I think.

(*Chairman.*) Quite so.

(*Mr. Balfour Browne.*) It is not true; it is not accurate, as we can show; but I do not want to go into it.

16,137. (*Mr. Pope.*) It was thrown out, as a matter of fact, at any rate?—As a matter of fact, it was thrown out.

16,138. (*Mr. Balfour Browne.*) That is so; by Parliament, I take it, and not by the County Council?—I was at several conferences with the agents of the London County Council, and they opposed most strenuously any increase of works. They stated that they did not mind us having, say, sufficient money to carry us for two years for extending our mains, but they would not agree, under any circumstances whatever, to our having additional works for storage or anything else.

(*Mr. Balfour Browne.*) But the objection of the County Council really was, that in that Bill they took large money powers, and there were no works shown. That was the objection; but I do not think it is necessary to go into it, and your Lordship ruled, on a former occasion, that you would not.

16,139. (*Chairman.*) No; I really do not want to go into any matters of controversy. (*To the Witness.*) I only want to see whether your company did sufficiently provide for the future, because at present you are in a disastrous state of failure?—Then I should like to explain what means we have taken as our district has increased, to increase our supply.

16,140. (*Mr. Pember.*) I think you ought to say what there was in the Bill of 1893, and what there was in the Bill of 1894?—Yes, I think so. In our Bill of 1893 we proposed to extend our storage by 600 million gallons; this Bill was lost.

(*Mr. Balfour Browne.*) May I say that the Bill did not contain any works at all. It contained money powers without works.

(*Witness.*) Yes, but I do not think it is worth while arguing that, because the London County Council knew exactly—

(*Chairman.*) It is not a question of whether it is worth arguing; but is it a fact that your Bill contained only money powers, and not powers for works?

(*Mr. Balfour Browne.*) I am wrong to this extent: there were 12,000*l.* worth of works shown, but there was a capital power of, I think, nearly half a million or a million.

16,141. (*Mr. Pember.*) Did you explain at the time what the capital was asked for?—Yes, I did.

(*Chairman.*) That did not bind your company.

(*Mr. Pember.*) I do not know, I am sure.

16,142. (*Chairman.*) Go on with your statement, Mr. Bryan?—Next year the plans showed exactly the works, and the opposition was just as vehement against us, and we got through by, as is well known; one vote on the second reading, and we got powers to make additional reservoirs to the extent of 600 million gallons. Those reservoirs were completed in 1897, but the droughts in 1895 and 1896 had come upon us before these reservoirs were finished. The 1896 drought was a record drought so far as the available volume of water from the Lea was concerned. Immediately I knew of the extent of this drought I reported to my directors the necessity of going to Parliament again for additional storage. They adopted my report and we went to Parliament in the end of 1896, that is for the session of 1897, and we obtained further powers to construct reservoirs of a capacity of 1,000 million gallons. The record of 1896 being again beaten by the record of 1898, I have reported to my directors once more the necessity of more storage, and a Bill will be deposited this next session in Parliament for additional storage again. Therefore, I think, as we have followed the plan of seeking for powers as quickly as it has been possible since the drought has shown us the necessity for going for further powers, I do not think we can be very much blamed, especially considering what even Sir Alexander Binnie himself in his evidence before this Commission states—I refer to Question 9423, where he is asked: (Q.) "But have they" that is the East London Company, "added sufficient?"—"I think so. (Q.) Have they added up to the standard?"—"I think so. They do not claim to get more than 30 million gallons a day, if you recollect. They are drawing a little more than that, but I think with the reservoirs they have now got they can supply that amount." The droughts of 1896 and 1898 have shown that our existing reservoirs with the powers granted last year are not sufficient. If I have erred I have erred in very good company and with so eminent a man as Sir Alexander Binnie to have stated that. But the events of this year have shown that our storage is insufficient to guarantee the 30 million gallons a day from the Lea at the end of a long drought, and therefore we shall be in Parliament again this next session for extended powers.

16,143. (*Mr. Pember.*) There is one figure the witness has not given, and perhaps you will pardon me for asking for it to make complete what he has just told us. [*To the Witness.*] What was the amount of your storage before you asked for that 600 million gallons?—600 million gallons.

16,144. Before?—Yes.

16,145. So that you doubled your storage by your Bill of 1894?—Yes.

16,146. (*Mr. De Bock Porter.*) If you had had the additional storage provided you would not have been able to fill the reservoirs, because, as I understand, you have not been able to fill those you have already completed?—Yes, they were full on the 20th of June of this year, and if we had had the thousand additional millions we should have been able to have filled them during the autumn of the previous year and January of this year. I should like to explain that when our reservoirs are not full we pump the largest quantity we possibly can through our Thames main and from our wells until the reservoirs are full. So that in addition to the water coming down the Lea we take all our other available water until those reservoirs are full.

16,147. (*Major-General Scott.*) What amount of storage will be necessary to guarantee you a supply of 30

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Mr. W. B. Bryan. million gallons a day from the Lea, looking to the drought of this year?—As the drought is still continuing I should much prefer, if you would excuse me answering that question, because I cannot answer it accurately. I shall have to answer it accurately before committees of the Houses of Parliament, but I cannot make out my figures till I know the extent and duration of the existing drought.

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16,148. You are not yet out of the wood?—No, but it will be very much larger than anything we could have anticipated, very much larger. It will not be much less than 5,000 million gallons, if not more than that.

16,149. (*Mr. De Bock Porter.*) And all this additional expenditure which you contemplate is necessary in order to maintain your existing supply?—To maintain a constant supply at the end of a long drought.

16,150. Yes, but it is necessary to provide the supply that you are requiring at the present time. This is not provision for future customers?—Yes.

16,151. Is it to supply the existing customers?—No. The reservoirs will be made not only to supply any deficiencies that we have found during the past year, but the reservoirs will be made of sufficient capacity to give an additional supply for our future requirements.

16,152. (*Mr. Pember.*) Cannot you say what the amount of them will be in the Bill?—No, I cannot yet, because the plans are not finished, nor are the calculations finished. They will be finished by the 30th and ready for deposit. We are very busy with all these calculations and plans at the present time.

16,153. (*Mr. De Bock Porter.*) But a very large portion of this expenditure that you contemplate will be unremunerative?—To a certain extent it may, but all the expenditure is remunerative from one point of view.

16,154. (*Chairman.*) From what point of view? You are distributing the same water to the same customers and getting the same rentals, and from what point of view is your expenditure for storage remunerative?—That is a very difficult question to answer—very difficult.

16,155. So I should think, but it is your own assertion you know, that it is remunerative from one point of view, and I want to know from what point of view?—Our district is constantly increasing, and the revenue is constantly increasing.

16,156. Yes, but you want your storage for the supply of your existing customers?—A portion of it; not all of it.

16,157. No, but a great portion of it. You want your storage to make good the defects in your arrangements for the past?—Certainly, and a certain portion of it is quite necessary to enable us to assure the 30 million gallons a day, at the end of a long drought, from the River Lea.

16,158. Now I am going to pass to the subject of inter-communication. You have got at present, as I understand, means of inter-communication that enable you to get over 6,000,000 gallons a day from the New River Company, and between 5,000,000 and 6,000,000 gallons a day from the Southwark and Vauxhall?—Yes. The means of inter-communication with the New River are sufficiently large to take a very large volume beyond the 6,000,000 gallons, depending upon what they can supply us with the help of the other two companies.

16,159. (*Major-General Scott.*) The inter-communication is the river Lea?—A long length of 24-inch main has been laid from the Grand Junction to the New River, and this length of 24-inch main has a connexion also with the West Middlesex. If the West Middlesex and the Grand Junction together can supply the New River with a considerable amount of water, the New River can release us the same amount in addition to what they have to spare up at Hertford.

16,160. Yes, and I repeat that the means of communication of the New River with you is the River Lea?—Yes, the River Lea.

16,161. (*Chairman.*) Then you calculate for next year, at any rate, upon only 6,000,000 gallons from the New River, and 6,000,000 gallons from the Southwark and Vauxhall?—That is so, but I have stated what it may be possible, after July, to obtain from the New River; we can obtain from the Grand Junction and the West Middlesex Companies 2,000,000 gallons a day more than I have shown in the table.

16,162. But that 2,000,000 gallons will come by the river Lea?—That will not matter; we get it.

16,163. I do not say whether it matters or not; I am on the point of inter-communication. Therefore, the existing inter-communications bring you all you want for next year?—Yes, they do.

16,164. Surely, then, what do you want with any further inter-communication? I mean, why should the companies be spending 300,000*l.* or 400,000*l.* in making fresh communications, when all you want, and all you can get, is conveyed by the present system of inter-communication?—But I did not understand that the inter-communication was entirely for the advantage or for the benefit of the East London Company. It may be useful to the others.

16,165. I am asking you about the benefit to your company; you have got at present communications that will suffice to bring you all that you want for next year?—We have.

16,166. Very well, and you want nothing more, then?—I am quite content with the communications that we have already got, and that have been made within the past two or three months.

16,167. You do not even want the extra main that Sir Henry Knight has spoken of from Nunhead Reservoir to the Tower Subway?—So far as we are concerned the 6 millions that they can pass us through there in a day will be ample for our purpose according to my estimate. But, on the other hand, if other companies want the inter-communication it will be very useful to them.

16,168. Yes, we will get the other companies when they come, but I am dealing with you now. You do not want any fresh inter-communication at all?—I am quite content with this.

16,169. (*Mr. De Bock Porter.*) Will the inter-communication with the Southwark and Vauxhall give all that they can spare?—No, I think not. They will be able to spare more than the 6 million gallons.

16,170. (*Chairman.*) The Southwark and Vauxhall could supply 10 millions, they told us, by constructing a new main, but you do not want 10 millions?—We want 6 millions, my Lord.

(*Mr. Pember.*) Other people might want more.

(*Chairman.*) They may, but nobody has wanted it hitherto.

(*Mr. Pember.*) But this scheme is not put forward by the companies as something which they think necessary but as something that they are willing to do and the expense of which they are willing to bear.

(*Chairman.*) Yes, we have heard that.

16,171. (*Major-General Scott.*) How many years will it be before you can throw overboard these connexions with the other companies for the purpose of supplementing your own supply?—We are about to let the contracts for the new reservoirs, and we shall let them, I hope, this year. It would take, I should think, two years at least to make the 1,000 million gallons storage. I should endeavour to get it done in the two years.

16,172. But then you have got to get more storage than that if you get your 30 million gallons from the Lea?—That 1,000 millions extra storage would in 90 or 99 per cent. of droughts give us the 30 millions but for an extraordinary drought like this it would not, and that is the reason that I am advising my directors to go to Parliament again. As to when the reservoirs, for which a Bill will be laid before Parliament in the coming Session, can be finished, I cannot very well answer, because I do not know in what way Parliament will deal with the Bill.

16,173. But we have got to look forward to the possibility in 1899, or 1900, or 1901, or 1902, or 1903, or, perhaps, 1904, that another drought may come similar to this one that we have had this year?—Then in that case, with the help of the other companies, through the connexions already existing we shall be able to give a constant supply.

16,174. But your population will have increased in four years by 100,000?—By 100,000. That means 3 millions more per day.

16,175. And that will have to be provided?—That will have to be provided.

16,176. By inter-communication?—Or, if it is an abnormal season by the help of the other companies; if

it be not an abnormal season it will be provided for from our own resources.

16,177. (*Mr. De Book Porter.*) Then you are not likely to be independent of the other companies for some years to come?—I hope in two years we shall be independent of them; I hope so,

16,178. (*Mr. Pember.*) Their storage will be for 73 days at 30 gallons per head per day in two years' time when this 1,000 million gallons reservoir is made. They have got 1,200 now, and adding a 1,000 to that, that is 2,200, and dividing that by the proper division, you get the measure?—Yes, but that is assuming not a drop coming down the Lea.

(*Mr. Pember.*) Assuming not a drop coming down the Lea.

(*Mr. Balfour Browne.*) You cannot draw every drop out of the reservoirs, you know.

(*Mr. Pember.*) No, and we will take off three days, which is nearly 100 million gallons; call it 70 days.

16,179. (*Major-General Scott.*) In a year like this you would have to carry forward the store from the previous year, would you not?—Yes.

16,180. I do not see that it is very likely you would be able to dispense with the assistance of the other companies for a certainty in less than two years?—No. As I said just now, if the season two years hence be very abnormal like the present one, we may have to use the connexions between the Southwark and Vauxhall and the New River again.

16,181. Would it not be better as the supply would have to be increased for that time, to carry out the connexion by means of the main from Nunhead to the Tower Subway?—Yes. I think this No. 2 Scheme that was laid before you the other day—

16,182. (*Chairman.*) But that is not No. 2 Scheme?—That is part of it, my Lord.

(*Chairman.*) No, no. It has nothing to do with it, I think. The main from the Nunhead Reservoir to the Subway was Sir Henry Knight's Scheme, No. 3 as we call it.

(*Mr. Balfour Browne.*) It is shown entirely separately in their map upon the wall.

(*Chairman.*) I wish somebody would explain that map.

(*Witness.*) It is here.

(*Mr. Pember.*) I am told by Mr. Hunter that it is in No. 2 Scheme.

See 16,701. (*Chairman.*) Is it? We have never had No. 2 Scheme put in yet.

16,183. (*Major-General Scott.*) You think it would be better to carry out that part of the arrangement?—Yes; I think it would be a wise thing to do.

16,184. (*Chairman.*) Then that is supposing you will want more water from the Southwark and Vauxhall than you have estimated for, next year?—Either from them or from the New River and the Grand Junction.

16,185. But this main to the Tower Subway will not help you to get more water from the New River?—No, but there are 2 million gallons a day extra there over and beyond what is in my second table.

16,186. Yes, but that is from the New River; that is to come down the River Lea, and the main from the Nunhead Reservoir to the Tower Subway has no more to do with that than I have?—So long as we get the water it does not matter whether we get it from, the Southwark and Vauxhall or from the Lea.

16,187. No, but General Scott is putting to you whether it is desirable to have this main from the Nunhead Reservoir to the Tower Subway, and it cannot make it desirable to have that main that you will have to get water from somebody else?—I should say it is desirable to have a duplicate main, because all duplicates are an advantage in case of difficulty.

16,188. It is desirable to ensure a possible increase in your supply from the Southwark and Vauxhall, but it cannot help your supply from the New River?—No, certainly not.

16,189. Then do not lug in the New River when we are talking of that main?—I was simply lugging in the total volumes of water that we require for that purpose.

16,190. Yes, but the point is on what ground do you recommend this Scheme No. 2 of inter-communication.

I would take that for instance?—Because I think inter-communication is a very desirable thing in case of any emergency in any company's district.

16,191. The scheme of inter-communication in No. 2 cannot be completed for the next two years, can it?—I do not know.

16,192. But I ask you as an engineer, and you know the works that it comprises?—I think a very considerable portion of them could be completed very much earlier than that.

16,193. (*Mr. Pember.*) How long do you give?—To lay the new main from Nunhead down to the Tower subway would not take more than six months.

16,194. You say that is part of Scheme No. 2, do you?—Yes.

16,195. (*Major-General Scott.*) My question was really this: looking to the fact that you will not probably be able to disconnect yourself from these inter-communications with the other companies for more than two years, would not it be better at once, or as soon as possible, to lay that main from Nunhead to the subway, and secure a larger supply, if necessary, by that means?—Yes, I think it would.

(*Chairman.*) Could someone kindly tell me where, in Scheme 2, I shall find this.

(*Mr. Pember.*) No. 5 is the Nunhead main.

16,196. (*Chairman.*) Yes, I see it. I did not know it was part of No. 2 Scheme. I do not think we need go through the list of connexions that exist at present, need we. As to the different schemes of inter-communication that we have had laid before us, I do not know whether they are all present to your mind. Scheme No. 1 we had last week?—Yes.

16,197. And Scheme No. 2 has not yet been put in evidence in a complete form, but you know what I mean?—Yes, I do.

16,198. Then there have been Sir Henry Knight's suggestions of a few trifling works in comparison?—Yes.

16,199. Which of those three systems do you recommend?—I think the No. 2 Scheme is a very good and comprehensive one, in the interests of the whole of the companies.

16,200. In the interests of your company, do you think that Sir Henry Knight's suggestions would be sufficient?—I do.

(*Major-General Scott.*) Would you advocate the laying of a main from Campden Hill to Poland Street, which was referred to by Mr. Hunter on the last occasion when we were here?

(*Mr. Pember.*) That, I think, is main No. 2 of Scheme No. 2.

16,201. (*Major-General Scott.*) Yes, I dare say it is?—I am afraid without a little study I cannot answer that question as to that particular main. It is far out of my company's district, and without the maps before me I cannot answer it straight off.

(*Chairman.*) It interests your company, because it would enable the Grand Junction and West Middlesex water to come to you round through the New River, would it not?

(*Major-General Scott.*) Yes.

(*Witness.*) It does at the present time.

16,202. (*Major-General Scott.*) That would give greater security to that supply, which at present is liable to interruption during the earlier part of the summer?—It would duplicate that, yes.

16,203. It would add to it?—Or add to it. I believe at the present moment we are getting five millions a day from the Grand Junction.

16,204. But they cannot keep that up during the hottest portion of the summer, when they themselves have to supply a larger quantity of water?—Yes, that is so. I would like to make one thing quite clear, if I may, and that is that the carrying power of the present main from the Southwark and Vauxhall, although the average amount was only in one month 4,800,000, we get as much as 5½ millions a day throughout some days.

16,205. (*Chairman.*) I think you told me that before, at least, I have it in my mind, and it must have been through you, I think, Mr. Bryan, that the —?—I was not quite certain that I had made it quite clear that the main can bring 6 millions a day through, but;

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Mr. W. B. Bryan. it was simply due to interruptions from various causes that we had one or two days short in the month which made it less.

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16,206. (*Major-General Scott.*) The supply is liable to interruption, because there may be calls on that main for the Southwark and Vauxhall supply, as we understood from Mr. Restler, in the case of fire or other cause there may be a withdrawal from that main which is now giving your supply, which would reduce the volume?—It reduces the volume slightly. It does not reduce it to a very large amount.

16,207. But if an independent main is laid from Nunhead to the subway there would be no risk of interruption; that is so, is it not?—Not from those sources you have mentioned.

See
16,882-6.

16,208. (*Chairman.*) I do not know whether you know, perhaps it is not reasonable to expect you to know, but do you know whether typhoid has increased in your district lately?—I cannot answer that.

16,209. (*Major-General Scott.*) There is the contingency of the New River Company requiring a larger supply for its own district in the course of a few years?—Yes.

16,210. Have you taken that into account?—I think that has been done by the New River Company's engineers. They are joint partners in the Staines scheme, and I think—I am speaking subject to correction—that they have the power to take 15 millions a day, and, of course, that will help them for a considerable time, and enable them to continue their assistance to us in case of necessity.

16,211. But when will that become available; not until the first instalment of the Staines scheme is completed, will it?—No, I should think not.

16,212. 1905 that is, is it not?—I do not know the date when it is assumed that that will be completed.

(*Mr. Pember.*) 1902.

16,213. (*Mr. De Bock Porter.*) Do you assume that the New River Company will be able to spare these six million gallons a day notwithstanding the increase of the demands on their own resources?—I have only assumed, Sir, that the New River will be able to spare the six millions with the help of the Grand Junction and the West Middlesex. During the past season they have given us the full six millions themselves.

16,214. (*Chairman.*) The Grand Junction have told us that they could at most deliver a million and a half in the summer; that is, at the time when it is wanted?—Yes, I believe that is so.

(*Mr. Pember.*) Before Mr. Balfour Browne cross-examines Mr. Bryan, might I venture to ask him one question which we have not yet had answered.

(*Chairman.*) Pray do, Mr. Pember.

See
16,121-3.

16,215. (*Mr. Pember.*) You said, very properly, Mr. Bryan, if you get a flood in the Lea of 1,400 million gallons, of course you could not expect to take that down per diem. But now, out of such a flood as would represent a maximum flow of that amount, how much should you hope in the course of a few days to get into your reservoirs; or what would be a reasonable thing to hope for?—A flood of 1,400 millions passing over Fielde's Weir would in a day or two later be a considerably smaller volume.

16,216. That one can quite understand?—And our present intakes will accommodate at least 200 millions a day.

16,217. In a good flood of that sort how many could you hope, with your 200 millions, would go into your reservoirs. I want to see what a flood would do for you?—Without reference to the tables, I cannot answer that off-hand, but for a good many days.

16,218. For a good many days?—Yes.

16,219. Then one flood would go a long way towards furnishing you with 1,000 million gallons?—Yes, it would. Oh! decidedly, and with our new Reservoirs Bill, which will be before Parliament next session, we are making considerable provision to take in flood waters. May I just say that those flood waters we should pass into the River Lea Navigation for navigation purposes.

16,220. Would you mind telling me, without pinning you to any exact number of gallons, is it something

like 4,000 to 5,000 million gallons, that your proposed scheme of this year intends to give you?—Yes, it is.

16,221. And have you any doubt that in anything like ordinary seasons the Lea will, by its flood waters, provide you with the amount of storage which your reservoirs will hold?—I have no doubt whatever, and I have been backed up by the best engineering advice that I can get in this country.

Cross-examined by Mr. BALFOUR BROWNE.

16,222. I see that in looking forward to the future—that is to say, a possible drought next year—you have not taken into consideration anything that cannot be supplied by the present means of inter-communication?—That is so.

16,223. And I take it that you believe that with the present means of inter-communication you could tide over a drought as serious as you have had this year?—Yes.

16,224. Therefore I do not understand it to be part of your scheme even to have the construction of those works which are in Scheme No. 2, which was put in before this Commission?—I have not referred to it at all in my evidence.

16,225. And as I understand, your idea about the means of inter-communication was rather to help the other companies than your own?—No, all the companies.

16,226. Mr. Collins told us that, leaving out your company, none of the other companies required inter-communication. You have got sufficient means of inter-communication, therefore there are no means of inter-communication wanted. That is so, I think?

(*Mr. Pope.*) He does not find any fault with the argument.

(*Witness.*) I do not.

(*Mr. Balfour Browne.*) Very well, if it is assented to.

(*Witness.*) I may say that two of these mains are included in the other means of inter-communication, which have been laid before the Commission.

16,227. We see that by the figures which were put in. The works under Scheme No. 2, including the Nunhead main, would cost 234,000*l.*, and the land according to one witness, probably 300,000*l.* If this is entirely unnecessary it is a pity to spend more than half a million of money, is it not?—I think if you could make everything absolutely sure and certain, that if any company besides the East London should have even a temporary breakdown, as a policy of insurance it is worth something.

16,228. As a policy of insurance. I thought you said duplicate mains would be a policy of insurance, and the New River Company has duplicate works everywhere, has it not?—I do not know.

16,229. You yourself are putting up duplicate pumping works just now you told the Commission?—To our wells. We have duplicate works for ordinary distribution of water.

16,230. That, as I understand, will be an insurance?—Certainly.

16,231. Now in two years, if all goes well with your present works, do you think you could then do without the assistance which is put down in your table, both from the New River and from the Southwark and Vauxhall?—In normal seasons we could.

16,232. And if the scheme which you are going to submit to Parliament this year is sanctioned, even in abnormal seasons you think you would be able to do without?

(*Major-General Scott.*) When finished?

(*Mr. Balfour Browne.*) When finished.

(*Witness.*) When finished, certainly, and I think it is our duty.

16,233. Will you tell me—I do not want to pry into the scheme, because very likely you have not considered all its details—but will you tell me this: Are the new storage reservoirs contemplated by the Bill of next session to be in the Thames Valley or in the Lea Valley?—In the Lea Valley.

16,234. And to utilise Lea water?—Yes.

16,235. Lea water alone?—Yes.

16,236. Not necessarily for water that is pumped or brought by your other main from the Thames?—Water obtained in the valley of the Lea.

16,237. It therefore becomes rather important, does it not, to see what amount of water you can rely upon from the River Lea?—Yes.

16,238. And I do not think you have given us exactly the gaugings of the River Lea at Fielde's Weir. You gave us certain figures, but they were not the complete gaugings at Fielde's Weir?—I gave certain figures which were the gaugings at Fielde's Weir, less the water purchased from the New River.

16,239. You both have to depend upon the water that goes down the Fielde's Weir, have you not?—Certainly.

16,240. Can you give us the total quantity going down the Fielde's Weir upon which you both draw?—The New River's intake is above Fielde's Weir. It does not go down to Fielde's Weir; the New River take it above.

16,241. Is there some point above the intake of both companies, where you can give me the quantities going down the River Lea?—No.

(Mr. Pope.) The gross quantity of the Lea?

(Mr. Balfour Browne.) The gross quantity of the Lea.

(Witness.) The gross quantity of the Lea will be that in General Scott's table. General Scott has taken this out. He has added the New River's volume in addition to that passing over Fielde's Weir, and the figures that General Scott gave you give the total flow of the river.

16,242. Take the figures that you gave. You gave, in January 48 millions at Fielde's Weir?—Yes, I did.

16,243. Is that the quantity gauged by you, or by the officers of the Lea Conservancy, or by whom?—Fielde's Weir was put up at the instance of the two companies, and it is gauged three times a day by an officer of the Lea Conservancy for the benefit of the Lea Conservancy, the New River, and the East London; and these gaugings are paid for by the three bodies, and are supplied to them throughout the year.

16,244. Now, if I add to the 48 millions what is taken by the New River, do I get the total gross of the River Lea above the intake of the New River Company?—Yes.

16,245. Will you tell me what it was in January?—I will assume that the New River take $22\frac{1}{2}$ millions. I do not know exactly whether that would be right, or not.

16,246. I find in the table put in by Mr. Restler, I think it was, that the average daily abstraction by the New River Company was $22\frac{1}{4}$, which is very near $22\frac{1}{2}$ millions?—That would bring it up to 70·8, as I have it.

16,247. 70·5?—Yes.

16,248. That is the total quantity that you have to draw upon?—Yes.

16,249. Now, would you complete this table for me? You gave me in August six millions; to that I have to add 16·8, have I not?—No. That is where a little confusion has arisen.

(Mr. Pember.) Of course, that 70 millions is only an average rate. Sometimes it might be higher.

(Mr. Balfour Browne.) I am aware of that.

16,250. Just follow me. You gave August six millions?—6·8 millions.

16,251. You did not give the points to-day, but it does not matter. Then, in order to find out the total quantity you tell me I have to add what the New River Company take?—Yes.

16,252. The New River took, in August, 16·8?—Yes.

16,253. Therefore, the total quantity?—No.

16,254. Yes?—Then add to it the amount the New River sold to us—

16,255. Add?—Add to the two figures you have just given the amount of water—

16,256. Very well, I will do that. Now, will you tell me what that comes to?—Yes.

16,257. In August they were selling you six millions, was it?—Yes.

16,258. That makes 28 millions, as the total flow of the River Lea?

(Mr. Pope.) Average flow.

(Witness.) The average flow for the month.

(Mr. Pope.) Is not that a fallacy when you are dealing with capacity for storage?

(Mr. Balfour Browne.) I have only got the averages: I cannot get the other figures.

(Mr. Pope.) I know.

16,259. (Mr. Balfour Browne.) There was nothing abnormal in that month. There was no great flood: that is quite obvious?—There was a very abnormal drought.

16,260. Yes, but from day to day it was very much the same?—Take it over a week. From day to day it fluctuates enormously: but you must take it over a week.

(Mr. Balfour Browne.) Take the next month, September.

(Major-General Scott.) Perhaps I may interrupt you for a moment. You have not got that total flow quite correctly. You said 28 millions; it is 29.

(Mr. Balfour Browne.) I said 28, because I had not got the decimal points.

(Major-General Scott.) It is 29 really.

(Mr. Balfour Browne.) I am very much obliged to you, Sir; I will take that.

16,261. Now take the next month, September; you gave me the figure you got at Fielde's Weir, two million gallons?—Yes.

16,262. That month they were supplying you with six millions?—Yes.

16,263. That makes eight, and I have to add that to what they themselves get, 16·4; is not that so?—Yes.

16,264. That is 24?—Yes.

(Mr. Balfour Browne.) I daresay you will correct me if am wrong.

(Major-General Scott.) 24·6.

16,265. (Mr. Balfour Browne.) Then October it was five, therefore it will be about—I have not got the figures that the New River Company took then. Can you tell me them?—No, I cannot. I should think, as they sold us the six millions, it would be about 16 as before.

16,266. Can you tell me how much has been going over Fielde's Weir in November?

(Mr. Pember.) You must add to those figures what is used for navigation, Mr. Browne.

(Mr. Balfour Browne.) Forgive me, no.

(Witness.) I cannot tell you the average for this month.

16,267. (Mr. Balfour Browne.) There is one other figure I should like to get from you. Can you tell me what you have got in storage to-day?—I think it is approximately 400 million gallons.

16,268. Out of a total of 12?—Yes.

16,269. Or about one-third?—Yes, one-third.

16,270. Unless something abnormal happens in the way of rain, you say you will have a difficulty in filling your reservoirs this year?—No, I do not want anything abnormal, except that all rain is abnormal just now, but if we get a moderate rainfall—a very moderate rainfall, now—the river will rise, because the three inches of rain which fell in October was practically all absorbed, and what rain comes now will flow into the river and away down to us.

16,271. Again, going back to your calculation of what you may depend upon in the future, you have taken 24 million gallons from the River Thames and your wells?—Yes.

16,272. I understand that adding all you could, you had only got 9·8 millions from the Thames—I think that is the highest figure in those four bad months—and 9·5 from the wells?—That is so.

16,273. Instead of about 19 million gallons you are calculating for 5 million gallons extra from those two sources?—Yes.

(Chairman.) No, no. The 24 million gallons includes the supply of two millions from the Hanworth springs,

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Mr. W. B. Bryan. I think, and extra supplies from new wells in the Lea Valley. It is not the same.

14 Nov. '98 (Mr. Balfour Browne.) I am not quite sure about that, but we will see.

16,274. At the present time you have got, of course, a right to draw water from the Hanworth Well?—Yes.

16,275. That is a well in the Thames Valley, it is not?—Yes.

16,276. Why is it then you have not been getting the Hanworth water?—We have been getting it, but I have explained over and over again that our Thames main could not convey more than 10 million gallons. That main is 21 miles in length, and until we cut that main in two, as explained, and pump again, we cannot get the extra volume through it.

16,277. I wanted to get that. Therefore, in relying upon two millions from Hanworth, you have to carry out certain works in order to do it.

16,278. At what cost?—The cost will be very small. There is under half a mile of main to lay.

16,279. In the year 1897, did not you get capital powers to the extent of 48,000*l.*, for the purpose of laying a main for this very purpose?—No.

16,280. You did not?—Certainly not.

16,281. What was it for, then; you know more about it than I do?—I ought to.

16,282. I see distinctly that your evidence was that you did. I am reading from your evidence given in Parliament in 1897. You were asked, "Do you want this 48,000*l.* to enable you to do your duty satisfactorily to the people in Whitechapel?" That is a part of your district, I take it?—Yes.

16,283. Then you said, "No; we have not a single complaint from them, and have not for some time past. It is to enable us to give better pressure all over that district in which the higher dwellings are being erected, and to utilise the three million gallons daily that we have at Hanworth at present." Do you remember that?—Yes.

16,284. Is that correct?—It is correct as far as it goes, without further explanation.

16,285. I had better read on, before you give the further explanation. Then you were asked, "Unless you have this main, you will not be able to carry out the constant supply?" and you said, "Yes we shall." (Q.) Then you do not want it?—(A.) We have three millions at Hanworth, which we cannot utilise without the relief mains. (Q.) Which it would be very convenient for you to utilise?—(A.) Yes, certainly; the three millions you will find scheduled in the list laid before the Royal Commission, but we have not been able to utilise the three millions, because we have not had sufficient carrying power. (Q.) If you use that three millions from Hanworth in Whitechapel, you would be able to use the other water that you get from the Thames somewhere else?—(A.) It is all mixed." It is a good deal mixed. (Q.) You would have three millions to sell to somebody else?—(A.) To distribute to our consumers, certainly." Now, will you tell me if that 48,000*l.* was not to enable you to utilise the Hanworth water?—That 48,000*l.* is to enable us to lay a main, by which we can get rid of the large volume of water available from the Thames and our Hanworth springs. At the present moment all this is poured into a reservoir in Finsbury Park. The outlet from this reservoir is only 30 inches in diameter. We can get the water into Finsbury Park, but we have not conveying power to get it out again, without an enormous loss of pressure by the friction; by making a connection between the Finsbury Park reservoir and Hanworth, we are enabled to get the whole of this water through without the enormous loss of pressure which we have at the present time. The reservoir at Finsbury Park receives water also from the Lea Bridge station. The same main is the inlet into Finsbury Park reservoir as the outlet from the Thames main, and that is the reason we require a new main to get rid of the water satisfactorily.

16,286. I see that that 48,000*l.* was sanctioned by Act of Parliament?—Yes.

16,287. Have you carried out that work?—Not yet.

16,288. Done nothing towards it?—Yes, we have done a great deal towards it.

16,289. What?—Well, we have been in negotiation for many months to get certain wayleaves, and we have not succeeded, and so we are busy with the drawings at the present time to divert the main, and we are also applying to Parliament this Session to sanction, on account of this diversion, a short length of main which is outside our statutory district.

16,290. Then, do I understand that when the 48,000*l.* or some equivalent sum is spent, that then you will be able to utilise 3 million gallons of water a day from Hanworth, that you are not able to utilise at present? Yes, we shall be able to utilise it, but in addition to that we shall have to cut the main in two at Campden Hill.

16,291. In addition to that?—Yes.

16,292. (Chairman.) It was 2 millions at Hanworth, it has now jumped up to 3 millions?—It has always been put—

16,293. (Mr. Balfour Browne.) It was 3 millions in his evidence?—That is easily explainable, we have 3 millions available there, but if you take the average over a long time, you are always subject to stoppages for a day or two now and then with a main of such enormous length as 21 miles; and I have kept my estimates purposely down to the 12 millions so that it could not be said that I was over sanguine. You could get water through at the rate of 13 million gallons a day, but if you have 30 days through the main instead of 31 in a month your average is reduced by that one day's stoppage.

16,294. (Mr. Balfour Browne.) Are you calculating then upon the water in the 24, or are the 2 millions you mentioned, as you said to his Lordship, in addition to the 24?—No, certainly not.

16,295. It is in the 24?—It is in the 24.

(Chairman.) He said 12 millions from each source.

(Mr. Balfour Browne.) From each source.

16,296. With regard to the 12 millions from the wells, you say you have sometimes pumped 11, but on the average 9½ has been all that you could get?—That is so.

16,297. Upon what works are you relying for the extra 2½ millions?—Pumping engines already erected and will shortly be in use.

16,298. Under Act of Parliament, or under your general powers?—I cannot answer that. These are our own works, and I should think it would come out of our general powers—some of it under this 31st Section of our last Act.

16,299. But they are, as a fact, being erected at the present time?—One of them, capable of lifting 5 million gallons, is erected at the present time—has been erected this last autumn.

16,300. Is that merely in duplication of another, or is it an entirely new work?—It is both. It is in duplication of a 3 million engine, and to lift an extra 2 million.

16,301. From an existing well?—Yes.

16,302. Now, you told his Lordship that you did not think the pumping of this large amount, we will say 12 million gallons a day, did affect the amount of water that got into the river Lea?—No, I think it does not.

16,303. The water that you pumped from the strata to which your wells go down, of course, originally came from heaven, and fell on the surface of the earth somewhere?—Yes.

16,304. And probably in the Lea Valley, I take it?—Probably.

16,305. If you take water from below, that water must be replaced by water from above?—Yes.

16,306. And if you did not take it from below, would not the level of saturation rise so that the stream, the River Lea, would get a great deal more if you ceased pumping your 12 millions?—That does not apply to our district.

16,307. It does not apply?—No, because as I have explained to your Lordship, the whole of our wells are situated where there is a thick stratum of London clay above.

16,308. (Chairman.) Above?—Above our wells, yes.

16,309. (Mr. Balfour Browne.) It may be above your well, but your well is pumping from a strata that gets the water of heaven somewhere?—Certainly.

16,310. And you have said in the Lea Valley. If so, you are reducing the level of saturation in that strata—I suppose it is chalk probably—you are reducing the level of saturation, and, therefore, taking from the surface water that would flow in the streams?—No, you are quite wrong about that. So far as my company is concerned, we are situated at the bottom end of the valley. There is a tank there in the chalk always being filled with water from higher levels, and it is the overflow from this chalk tank that we are intercepting. If we were situated where there was no London clay, or a considerably greater distance up the river, the conditions might be somewhat different.

16,311. The overflow would take place probably at the top of a valley. You are putting your pipe into the bottom of the reservoir, and therefore lowering the level at the top. Is not that so, Mr. Bryan?—Yes, but—

16,312. I have not seen it yet, but I am instructed that you said something very like that yourself. So long ago as 1886—and the geology is very much the same—you said this:—"At Walthamstow it rises to 'within about 20 feet of the surface'; that is the water?—Yes.

16,313. The level of saturation; "and at Old Ford 'within 42 feet from the surface. So that there is a 'large underground basin of chalk saturated with water, and if we drive large tunnels and pump continuously we must dry that underground basin; and when that underground basin is exhausted, we shall only get the amount of water which percolates from the rainfall through the chalk into the upper reaches of the river'?"—Yes.

16,314. Supposing it is not exhausted; suppose the level of saturation rises in the chalk, you cease pumping; then, of course, no more water could get down if the level of saturation was close to the surface, and the water would flow down the River Lea?—No.

(Major-General Scott.) Whose evidence are you reading?

(Mr. Balfour Browne.) Mr. Bryan's evidence given in 1886. It was given before a Commission that was sitting to inquire into the question of the pollution of rivers, and Mr. Bryan was speaking of the River Lea.

(Witness.) The position of the East London Water Company's wells at the lower end of the Lea Valley, as I have just said, is intercepting the water which is running to waste, and as I told his Lordship sometime this morning, when our Lea Bridge well was stopped for 24 hours, the water rose actually 130 or 140 feet higher than a well three-quarters of a mile away and higher up the valley, although the water in the other well was being pumped down to the very bottom.

16,315. You have said water running to waste; but I think in answer to his Lordship at an earlier period of to-day you said you could not say where it was going at all?—No one can say exactly where it is going, and for this reason. At Lea Bridge the clay is denuded for a short distance, and the chalk is covered with sands; the surface waters of the Lea Valley from time immemorial have been forcing their way up through the chalk there, and been flowing away through the sands through a large area of the country. The exact position the overflow finds its way into the Lea and the Thames it is almost impossible to find out. But there the fact is, that the water rises and it flows away through the sands and runs to waste, and the fact of reducing the water level say 100 feet at Lea Bridge would have absolutely no appreciable effect, or no effect whatever, upon the Lea 20 or 30 miles higher up the valley, where it is perhaps 70 or 80 feet higher in level and where the London clay does not exist.

16,316. That I have heard you say. Now, I want to ask you about the recurrence of these periods of drought—

16,317. (Chairman.) May I interrupt you for one moment? (To the Witness.) 70 or 80 feet above, you say?—Yes.

16,318. But you have just now spoken of the water in the well having been lowered by pumping 120 feet?—I was referring just now to the surface level of the ground, 20 or 30 miles higher up the country. The level of the River Lea is 70 or 80 feet above the level where our—

16,319. Of the place where your well is?—Yes.

16,320. But you have lowered the level of the water 120 feet?—Yes, as soon as we cease pumping it goes up again.

16,321. If you lowered it at the foot, so as to speak, of the basin, 120 feet, that may well have caused a lowering of the level of the water higher up the Lea of 70 or 80 feet?—No, it has not done so, because we have wells higher up, where it has not lowered it a bit.

16,322. That only shows that there is no connexion between your two wells; but there may be a connexion between the stratum from which you pump at this lower well, and the stratum from which we have heard that water bubbles up into the bed of the Lea higher up?—It is exactly the same stratum. It is chalk all the way.

16,323. Yes, but the fissures may be different?—May I go a little further in explanation of what your Lordship has asked me about. When we have been pumping down at Lea Bridge and Walthamstow we have stopped our well at Waltham Abbey and the water has actually overflowed the surface at the time that we are pumping at Lea Bridge and Walthamstow. That seems to me to be conclusive that the pumping of the water by us at our Lea Bridge and Walthamstow wells at the end of the valley has not the effect that Mr. Browne is speaking of.

(Chairman.) I cannot follow that in the least.

(Mr. Balfour Browne.) I should have thought it was the other way.

16,324. (Chairman.) It shows that the two wells are not fed from the same fissure in the chalk. But how does it show that one or other of those wells is not fed from the same fissure that feeds the Lea at another point?—Because our wells at Lea Bridge and Walthamstow are fed by innumerable tiny fissures, so small that you can scarcely perceive them. We have not met with a single large fissure at either Walthamstow or at Lea Bridge, with 8,000 or 9,000 feet of tunnel. The water weeps in in all directions. If there had been a very large fissure of indefinite length, as your Lordship has just been stating might occur, it might be different; but we have never found a large fissure of any length in any of our wells.

16,325. (Mr. Balfour Browne.) If the chalk there, as you said, forms one great reservoir it seems absolutely impossible to take water out of the bottom of that reservoir without levelling the water at the top?—It cannot lower the level of the water up at Hoddesden or Ware—the pumping of the water at Lea Bridge or Walthamstow.

16,326. Do you agree it is one reservoir?—I would rather agree that it is a series of reservoirs.

16,327. Then I think I agree with his Lordship that your illustration does not apply, because you may be pumping from one reservoir with no effect on the other?—If we have wells that have no effect upon others, then I think it destroys your argument.

16,328. (Chairman.) Suppose this box represents roughly the reservoir of the whole of the chalk, and I pump at this corner, do I not lower the level over the whole reservoir?—No, certainly not.

16,329. You say not?—Perhaps I misunderstood your Lordship. But we cannot find that our pumping lowers the level at our other wells.

16,330. You fall back upon your pumping, you will not take it from my box?—Perhaps in my eagerness to answer your Lordship I misunderstood you.

16,331. Mr. Browne is putting to you that the whole of the chalk in this Lea Valley is like one reservoir. Imagine this box filled with chalk and extending to 70 miles by 20. If it is all one reservoir and you pump at any point of it you surely lower the level in the whole?—That does not follow because the friction of the water through the chalk itself is so enormous that you can pump within a few feet of a borehole, and you will have water 100 feet higher than you.

16,332. (Mr. Balfour Browne.) That is only a matter of time; but ultimately if you take it out at one part of a vessel you must lower the level in that vessel?—No not if the means of filling it up again exceed your pumping out of it.

(Chairman.) Yes, of course.

16,333. (Mr. Balfour Browne.) That is a totally different matter. Suppose you leave it full, all the water will go over the top, will it not?—Yes.

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Mr. W. B. Bryan. 16,334. If it goes over the top, it will find its way into the River Lea?—Yes.

14 Nov. '98 16,335. If you take it out of the bottom, it will not find its way into the River Lea?—It depends upon where the bottom is that you take it from.

16,336. I think we have got to the bottom of that?—I wish that you had had the experience that I have had in the chalk, and you would not have asked these questions.

16,337. (*Chairman.*) Your experience contains this remarkable fact, that the more you pump the less water there is in the Lea; but you say that is a mere accidental coincidence—the more you pump from your wells the less water there has been in the Lea?—That has been due to the minute rainfall.

16,338. Very well?—We have only had for the 12 months ending September an average of about 12½ inches of rain instead of 25.

16,339. (*Mr. Balfour Browne.*) Now you are relying upon storage as the means for getting over this difficulty, and the storage, you tell me, that you contemplate is to be in the valley of the River Lea?—Yes.

16,340. Of course, to make that storage effective, you must be able to get water sufficient for the storage out of the valley of the Lea?—Certainly.

16,341. The difficulty, of course, that you want to get over with your storage occurs in dry weather?—Yes.

16,342. And, therefore, at that time, of course, the River Lea is helping you the least?—Yes.

16,343. If there is not in periods of drought enough water to store, your storage would be ridiculous?—No.

16,344. Was Mr. Greaves your predecessor as the engineer to the East London Company?—Yes.

16,345. I see he gave evidence on the East London Water Bill in 1867, and at Question 629, he was asked this: "I believe that in the year 1864"—that was the year you were referring to—"you found that the supply of water in the Lea was just sufficient, or barely sufficient, for your requirements?"—(*A.*) We did so. The year 1864 was such a year as had not been known before. It was the greatest drought "within the memory of anyone." Now, of course, your requirements, since the year 1864, have enormously increased?—They have.

16,346. Should I be wrong in saying that they have probably doubled?—Probably they have. I cannot carry all those figures in my mind.

(*Mr. Pope.*) What on earth has that got to do with it? There was no storage then. When they were drawing from hand to mouth, they could only get as much as they wanted from the Lea at a certain time.

(*Mr. Balfour Browne.*) It has a good deal more to do with it than my friend thinks. Then, in 1867, before the Royal Commission presided over by the Duke of Richmond, Mr. Greaves was asked at Question 5131:—"What proportion is that of the stream which passes by you?"—(*A.*) That will vary entirely with the season. During the year 1864, we took the whole of the volume; there was nothing went by, and we have had to plead poverty before the Committee of the House of Commons, while arguing the necessity for going to the Thames to help ourselves with a supply from that river. (*Q.* 5177.) You have, of course, had your attention directed a great deal to the River Lea, and although you have gone this session to Parliament to obtain a large quantity from the Thames above Teddington, yet do you consider the resources of the Lea to be now exhausted by your two companies, the New River and the East London, taking water from it—I mean independent of the question of the cost of getting it, but taking it as a purely physical question?—(*A.*) I am of opinion, that as the larger portion of London is dependent upon the Lea, it ought not to continue any longer dependent upon the Lea alone for its supply of water as to quantity. The caution that we had from the drought of 1864 was convincing. There is no room to doubt the question any longer. (*Q.* 5178.) In the case of the New River, their engineer has stated that he believes it is quite capable of yielding 10 million gallons to each of the companies in addition to the present quantity by

"proper storage reservoirs: do you concur in that view?" Mr. Greaves answered, "I am not inclined to store so largely, or to depend upon storage to that extent, because I know that there are winters when it is quite likely those reservoirs might not be filled. The winter of 1858 went off without a single flood; we have charge of the flood gates ourselves, on the river at Lea bridge, which govern the whole flow, and in the winter of 1858, we did not draw a single gate; therefore, where would the reservoirs be filled from in such a season?"

(*Chairman.*) This was evidence given on behalf of the East London Company in reference to obtaining permission to draw water from the Thames.

(*Mr. Pember.*) And more than 30 years ago, by a gentleman who is now dead.

(*Chairman.*) I really do not think this is relevant.

(*Mr. Balfour Browne.*) The first extract I read from Mr. Greaves's evidence was in reference to getting water, but the last extract was from evidence given before the Duke of Richmond's Commission when it was inquiring into the whole question of London water.

(*Chairman.*) I do not quite see how Mr. Bryan can be made to answer for Mr. Greaves's opinion.

(*Witness.*) I may say this, that Mr. Greaves, after that, made 600 millions of storage.

(*Mr. Balfour Browne.*) Quite so. But he said he did not depend upon storage, and in 1858 there would be nothing to store.

(*Mr. Pope.*) Is it not obvious that it is no use having large reservoirs unless you have got the water to put in them?

(*Chairman.*) And there may be such a winter when you will not get water to store.

(*Mr. Pope.*) There may be.

(*Mr. Balfour Browne to Witness.*) It is in that winter, when you really want the water in the reservoirs, when you cannot fill them, and now you are proposing to go to Parliament and increase your storage.

(*Chairman.*) We are not inquiring into that Bill, Mr. Balfour Browne.

(*Mr. Balfour Browne.*) No, but you have had that put before you.

(*Chairman.*) We are on the question of inter-communication. The question for us is, is inter-communication necessary or desirable, and Mr. Bryan has told us "I think it is desirable, although I do not need it, in order to fill my extra reservoirs."

(*Mr. Balfour Browne.*) And he also said, of course, that he would be absolutely independent of inter-communication if he had these large reservoirs in the Lea Valley.

(*Chairman.*) If he had those large reservoirs full, yes. But we are not discussing whether they are to get powers to make these reservoirs.

16,347. (*Mr. Balfour Browne.*) I know you are not, my Lord. (*To the Witness.*) Now I want to ask you about some figures you have put in to-day. Your first table shows what you had of your own resources, and what you borrowed. I think the six million gallons you had from the New River Company, at the amount that you paid for it, cost you about 100*l.* a day?—Yes.

16,348. And altogether you are paying for this water 178*l.* per day, or about 5,414*l.* per month?—Yes.

16,349. I do not know that you have given the figures for the corresponding months in the year 1897. Will you follow it and see if I am right. I think it might be convenient to have them on the notes. July, your total supply, as against the 44,959,000, was 45,842,000?—Yes, that is quite correct.

16,350. August, 1897; 44,560,000 as compared with the 40,656,000?—Yes.

16,351. September, 1897; 42,128,000?—Yes.

(*Chairman.*) We have got all these figures on the notes.

(*Mr. Balfour Browne.*) I did not know that we had.

(*Chairman.*) Not from this witness, but long ago.

16,352. (*Mr. Balfour Browne.*) Very likely, my Lord. I only wanted to get them together if I could. (*To the Witness.*) In October, 41,752,000?—Yes, that is right.

16,353. (*Mr. Balfour Browne.*) I wanted to get those for another purpose. Now, there is one thing I wanted to ask you which I do not quite understand. You said you got a very small supply, 200,000 gallons a day, from the Kent Company?—Yes.

16,354. And that that is limited only by the size of the 4-inch pipe which at the present time you are using?—Two 4-inch pipes.

16,355. Are you aware that those two 4-inch pipes run through the Blackwall Tunnel?—Yes, they belong to the London County Council.

16,356. And do you know that in constructing that tunnel a subway was made for the purpose of putting in large pipes, if necessary?—I do not know; but I know I suggested it to Sir Alexander Binnie, when the subway was being made, that it would be a very wise provision to leave a subway big enough for a 24-inch pipe.

16,357. I think your suggestion was carried out?—May I look at that plan?

16,358. Yes. I think you will find the two 4-inch pipes are in this part. In order to get it located I will ask you this:—Am I right in saying that the tunnel is just where the county boundary runs across the Thames, or somewhere thereabouts?—Yes, it is quite near there.

(*Chairman.*) Is that map on the wall intended to show Scheme No. 2?

(*Mr. Pope.*) Yes.

(*Mr. Balfour Browne.*) So I understood.

(*Chairman.*) The broad red lines, I suppose, are the mains.

(*Mr. Balfour Browne.*) The one to the east is the Nunhead one, and the other Battersea.

(*Mr. Pope.*) The broad red line from Nunhead down to the Thames, where the dotted line shows the crossing of the Thames subway.

(*Mr. Balfour Browne.*) And the Blackwall line is where that jagged line, the county boundary, crosses the River Thames.

(*Mr. Pope.*) Yes.

(*Mr. Balfour Browne.*) It is a good deal lower down than the red line, my Lord.

(*Chairman.*) Yes.

16,359. (*Mr. Balfour Browne to Witness.*) I do not suppose you deny at all that the Kent Company have a great deal of water?—They can answer that a great deal better than I can; but they have a very ample supply, I believe.

16,360. At any rate, if, instead of the two 4-inch pipes being used, a 24-inch pipe were put in in that subway, which has room for it, according to your own suggestion, how much water would that pass?—If you will tell me the length of it I will soon make a calculation.

16,361. It is quite short?—I mean the length it would have to come from their stations. If I have that I will soon mark the calculation.

16,362. Can you not do it roughly?

(*Mr. Pope.*) I do not think you heard Mr. Bryan say that this reservoir pipe would involve about a mile of main on the Kent side in order to connect the Kent works when crossing the river.

(*Witness.*) Say two miles.

16,363. (*Mr. Balfour Browne.*) Assume two miles—that will give you a margin—how much would it pass?—I should think we should get six million gallons a day through it.

16,364. You could get six million gallons a day from the Kent if you had a 24-inch pipe in there?—Yes.

(*Chairman.*) And they had it to give.

(*Mr. Balfour Browne.*) And they had it to give.

(*Witness.*) Yes.

(*Mr. Balfour Browne.*) I asked Mr. Bryan if they had it to give, and he said he would rather the Kent people should answer that question for themselves. We know, of course, what was said in the Royal Commission. I can show you the section, my Lord, of the Blackwall Tunnel, which was, as Mr. Bryan said, made at his suggestion. This is the place for the pipes. This is the roadway (*explaining plan*).

(*Mr. Pope.*) Do you mean the Blackwall Tunnel or the Tower Bridge.

(*Mr. Balfour Browne.*) I mean the Blackwall Tunnel—the London County Council Tunnel.

(*Mr. Pope.*) The Nunhead supply is with reference to the Tower Subway.

(*Mr. Balfour Browne.*) But that is a totally different thing. That is a good deal further up the river—about a mile and a half higher up the river.

(*Mr. Pope.*) You are speaking about the Kent supply—I beg your pardon.

(*Mr. Balfour Browne.*) The present communication with the Kent is through *here*—two four-inch pipes. These are the existing pipes, but a 24-inch pipe could be put in *there* and another *here* if necessary.

(*Chairman.*) Is this subway not to be used for anything else?

16,365. (*Mr. Balfour Browne.*) The subway is not at present being used, my Lord. The roadway is, of course, being used for traffic. (*To the Witness.*) Now we are obliged to General Scott, who has given us the proportion of the water that you borrowed, and I take it that, roughly speaking, about one-sixth of your whole supply in the months of July, August, September, and October was got from other companies?—Yes.

16,366. That is so?—Yes.

16,367. About one-sixth?—The exact proportion I will take from you.

16,368. We have got the exact proportions: General Scott was good enough to give them to us. Can you tell me what you are supplying at the present time? You have given us the supply in September and October: can you give us the supply now?—I will give it to you in a moment. Last week it averaged a little over 35 million gallons a day. That is as nearly as we could tell. We cannot tell very well till the end of the month, because we have to get at the amount from the Southwark and Vauxhall by differences. We communicate with each other, and we cannot tell day by day.

16,369. And you are enabled to do that by still getting water from the New River and Southwark and Vauxhall, and a small quantity from the Kent?—Yes.

16,370. You are still getting from all three, are you?—From all sources, yes.

16,371. And, as I understand, you are doing that in order that you may be laying away or storing water?—No, not altogether. We are laying away a proportion of it.

16,372. At the present time, if you chose to denude your reservoirs, could you supply your whole district with water without the assistance of the three companies?—No.

16,373. You could not?—No, not safely at present.

16,374. I think you have already told one of the members of the Commission you could not say when you would be in a position to do so?—No, that depends upon the increase in the flow of the river.

16,375. I want to correct one thing. In the Bill of 1893, which you said was rejected under certain circumstances, are you aware that the works which were included in that Bill were only represented by 1,115*l.*, and that you were taking capital powers for 500,000*l.* altogether?

Sec 16,140.

(*Chairman.*) Might I ask the bearing of that on the question of whether inter-communication is to take place or not?

(*Mr. Balfour Browne.*) My Lord, it does not bear upon it at all; but it bears upon the question as to why we opposed the Bill in 1893.

(*Chairman.*) I see.

(*Witness.*) But you opposed it after we had told you all about it.

(*Mr. Balfour Browne.*) I think I will leave it as your Lordship thinks it is not relevant.

(*Chairman.*) I am afraid I am a little to blame, Mr. Balfour Browne.

(*Mr. Balfour Browne.*) I quite agree, my Lord, it has no bearing.

(*Chairman.*) No. I did a little wander from the point myself, because the East London has certainly been in the pillory this time.

16,376. (*Mr. Balfour Browne to Witness.*) There is one question I want to ask, because I am not quite

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—

sure that you made it quite clear. You say you are going for further storage, and the further storage which will, roughly, represent 5,000 millions, will, of course, stand you in good stead, even for future supply?—Yes.

16,377. Do I understand your case to be that at the present time for your present supply your storage is deficient?—Yes.

16,378. It is?—Yes.

16,379. Even with the works that you are carrying out?—Yes, the present year has shown us that.

(*Mr. Balfour Browne.*) My Lord, I think, practically, I have done; perhaps you will allow me, in case I should think of another question to ask it of Mr. Bryan, to-morrow. My learned friend, Lord Robert, has still to cross-examine Mr. Bryan, so that Mr. Bryan will have to come back.

(*Lord Robert Cecil.*) I shall be very brief, because my learned friend, Mr. Balfour Browne, has put a great many of the questions I should like to have put on the

general question of shortness of supply, and I can only say that I am very glad to find the London County Council and Herefordshire in concert.

(*Chairman.*) I have been a little to blame myself. The East London having been rather in the dock, as it were; I did allow Mr. Browne to go beyond the point, which is, ought inter-communication to take place, and if so what?

(*Lord Robert Cecil.*) I will endeavour to confine myself strictly to that point.

(*Mr. Pember.*) Will there be any other witnesses called on this point beside Mr. Bryan?

(*Chairman.*) Yes, I hope so. We want to hear the engineers of the other companies on this general question of inter-communication.

(*Mr. Pope.*) Does your Lordship propose to go beyond this particular question of inter-communication to-morrow?

(*Chairman.*) No, I think not.

Adjourned to to-morrow at 12 o'clock.

Recall
Q. 16,3

THIRTY-FIFTH DAY.

Tuesday, November 15th, 1898.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

Sir JOHN EDWARD DORINGTON, Bart., M.P.
Sir GEORGE BARCLAY BRUCE, Knt., C.E.
ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.C., and *Mr. Freeman*, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and *Mr. Claude Baggallay*, Q.C., appeared as Counsel for the New River Company.
Mr. Littler, Q.C., and *Mr. Lewis Coward*, appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.
Mr. Pope, Q.C., and *Mr. Claude Baggallay*, Q.C., appeared as Counsel for the Southwark and Vauxhall Water Company.

(*Mr. Pember.*) My Lord, I do not know whether it is convenient that it should be done before my learned friend asks the question of Mr. Bryan, which he has been good enough to tell me he wishes to ask, or after; but yesterday there was a matter connected with the subject of the supply of water in Green Street, which you asked about, I think, and which Mr. Bryan then was not in a position to give you an answer about. He is now. Then, further, you also asked Mr. Bryan a

question about the increase of typhoid, and he has had an opportunity of looking at the Registrar-General's reports, and he will tell you better than I can what he has seen there, and how far it enables him to answer your question.

(*Chairman.*) If it is not inconvenient to Mr. Balfour Browne we will interpose that then.

(*Mr. Balfour Browne.*) It is not at all inconvenient, my Lord.

Mr. W. B. Bryan.
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Mr. WILLIAM BOOTH BRYAN recalled.

Examined by Mr. PEMBER.

16,380. With regard to the stoppage of supply in Green Street, to which the noble Lord in the chair called your attention yesterday, what have you to say?—I have seen the local officers of the company this morning, with respect to the complaint about the deficient supply to No. 111, Green Street. We can trace no complaint whatever from the gentleman living there, but we have had one complaint from No. 101,

Green Street, which is almost adjoining it, five doors away, which was to the effect that the water did not reach the high cistern. I find that this was examined, and the stoppage was at the ball valve, so that the only complaint we have had was one due to a cause not traceable to the company.

16,381. The cistern was out of repair?—Yes. The arrangement was this, that at all high supplies, where the pressure was not sufficient to reach the cistern in

the daytime, the water should always be turned on in the dead of the night, so that all the cisterns should be filled. That has been the rule throughout the district wherever a complaint has been made that water did not reach in the day time, that the water should be turned on in the middle of the night, so as to make quite sure that they did get a supply. If this complaint had been made to the company's officers it would have been attended to the same day.

16,382. Now about the Registrar-General's returns?—I have examined the Registrar-General's weekly returns for the past six weeks, and I find that in the Eastern districts supplied by the East London Company for the six weeks ending November 5th the number of deaths from typhoid were 1 to 39,000 people living; in the central districts not supplied by the East London, 1 to 33,000 persons living; and in the northern districts not supplied by the East London, 1 death to 31,000 living. I think that comparison shows that there has been no increase, and that the eastern districts compare most favourably with the other two.

16,383. (Chairman.) One per 31,000 as against 1 per 33,000?—The deaths in the eastern districts were 1 per 39,000 people living, in the central 1 to 33,000, and in the northern districts 1 to 31,000, the eastern districts being better than either of the other two.

16,384. (Mr. Pember.) Does that quite, may I venture to say, go the length of answering your questions, my Lord?—(To the Witness.) Have you any corresponding figures for the period before those six weeks, if so, perhaps his Lordship would like to have them?—I have only traced them in the past six weeks.

16,385. (Chairman.) Have you told us how much of your population of 1,300,000 is in the administrative county of London?—760,000. As bearing upon that I may state that the county borough of West Ham is entirely supplied by the East London, and its death rate has been 20 to 25 per cent. less than that of the whole of London throughout the whole of this summer and autumn.

16,386. My question to you yesterday was based upon a communication from the Board of Guardians of the West Ham Union, who say, taking into consideration the unprecedented number of cases of typhoid—27 at present in the infirmary, due, they believe, to the insufficient water supply of the last four months—they wished to draw our attention to the fact?—If I had known the communication had come from West Ham, I would have tried to have got the figures for West Ham, but I took the figures for the county of London. I can only say that the West Ham death rate is nearly as low as that of Brighton, and, according to the death rate of the past six or seven months, it might become a new sanatorium almost.

Further cross-examined by Mr. BALFOUR BROWNE.

16,387. Your suggestion on this point, my learned friend Mr. Freeman suggests, is that being protected from getting any East London water, they are protected from typhoid fever?—No, I did not make that suggestion.

(Mr. Balfour Browne.) My Lord, before I ask my one question, I want to merely put on record a contradiction. I am not going back upon your Lordship's ruling, but I want to deny what is stated at Question 16,138. Mr. Bryan there said: "I was at several conferences with the agents of the London County Council, and they opposed most strenuously any increase of works. They stated that they did not mind us having, say, sufficient money to carry us for two years for extending our mains, but they would not agree under any circumstances whatever to us having additional works for storage or anything else." I am instructed, my Lord, that that is an entire misapprehension and is not correct, but I do not want to go into it, because I do not think it is germane to your present proceedings.

(Chairman.) No.

16,388. (Mr. Balfour Browne to Witness.) Now, I only want to get one or two figures from you. You were good enough to tell us yesterday that the supplies in September 1897, I think you need not follow it unless you like—were 42,128,000 gallons on the average; the supplies from the company's works, leaving out the borrowed water, in September 1898, were 24,785,000; so that if you require to supply the same the deficit was 17,343,000, which you must get from somewhere. Is that not so?—I have only taken the one figure from the

other?—I cannot quite follow your figures; would you kindly give them to me again?

16,389. The supply in September 1897 was 42,128,000 gallons a day, and in September 1898, 24,785,000 gallons a day, leaving a deficit which you had to get from elsewhere or somewhere of 17,343,000 gallons on the average per day—that is 41 per cent. of the total supply?—I have not worked out the percentage, but if you say that, I shall assume it is correct.

(Chairman.) I cannot follow your second figure—what do you say was the supply in 1898?

(Mr. Balfour Browne.) The supply from the company's own sources, taking out what they got elsewhere, was 24,785,000 on the average per day.

(Chairman.) Where do you get that figure from—that is the one I cannot follow?

16,390. (Mr. Balfour Browne.) I think it is given in the table handed in by Mr. Bryan at Question 15,926. It is the summation of those figures in the September column. (To the Witness.) Now, I am just going to do the same thing on the same table for October. In October 1897, you supplied, as you told us yesterday, 41,752,000 on the average a day; from that same table I find your supplies from your own sources in that month were 23,112,000, leaving a deficit of 18,640,000, or 44½ per cent. of your total quantity supplied. These are your own figures, and you may accept them?—I have no doubt you have got them out correctly.

(Lord Robert Cecil.) I do not know whether your Lordship will allow me to ask a very few questions; I will undertake not to be more than a very few minutes. Of course, the questions that were asked by the London County Council are exceedingly valuable for the case of Hertfordshire, and we are exceedingly grateful to the London County Council for having put them.

(Chairman.) Yes, Lord Robert. In order that I may understand you, Mr. Browne, this 41 per cent. and 44½ per cent. is 41 per cent., and 44½ per cent. of the supply of 1897 in those two months.

(Mr. Balfour Browne.) Yes, my Lord, of the total quantity supplied in September 1897 and in October 1897. For the purpose of the argument I am assuming that they would have required the same in September of this year to meet their wants as in the September of last year—that is the assumption. I have got a copy of my figures, my Lord, which I will hand you if it will save you taking the figures down. (Handing document to the noble Chairman.)

Cross-examined by LORD ROBERT CECIL.

16,391. Those white rings with the green crosses on that map are your wells, are they not?—No.

16,392. There is one at Waltham and one at Chingford and one at Watford?—There is not one at Watford.

16,393. You have got six wells have you not?—We have one at Lea Bridge, one at Walthamstow, one at Chingford, and one at Waltham Abbey, and we have several more in construction but not in use yet.

16,394. Where are the ones in construction?—At Ponders End, Romney Marsh, Walthamstow, and Old Ford.

16,395. Could you tell me—perhaps you cannot—what the rest level in those wells is?—It varies very much. At Waltham Abbey if we cease to pump the water overflows, and at Chingford, which is the next well, if we stop there it rises to within about 12 or 14 feet of the surface; at Walthamstow I think it is about 30 feet from the surface and also the same at Lea Bridge. There has been no rest level for many months because we have been pumping and we cannot ascertain what the rest level is now.

16,396. When you pump do you pump it down a great deal?—Yes, we pump it down to the bottom so that the men can work in the tunnels. We are extending the tunnels at Walthamstow and naturally we must keep the tunnels dry.

16,397. In any case the water rises a considerable distance in each of these wells?—Yes, it rises from the level of the headings—the pump level—to the surface at Waltham Abbey, and overflows; at Chingford it will rise within a very short distance; and at other wells also within a very short distance.

16,398. That, of course, shows that the water is, so to speak, under pressure in the chalk?—Yes, it shows that the water comes from a level above that.

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Mr. W. E. Bryan. 16,399. (*Chairman.*) Has it been the case throughout this late period of drought that the water has risen in that way?—Yes, it has, but we have stopped on two occasions at Chingford to pack the pumps, and also at Walthamstow, and also at Lea Bridge. In every case the water has risen to, perhaps, 100 to 170 feet above the pumps.

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16,400. During this recent period of drought?—Yes, within a fortnight from now.

16,401. (*Lord Robert Cecil.*) I will not trouble you any more about the wells, but there are just one or two questions on the Lea I should like to ask you. In your second table, you do not provide for any more water being sent down the Lea than you sent down this year—I mean for the purposes of the navigation, and assuming that there is no more water in the Lea, naturally than there was this year?—No.

16,402. You do not?—No. The table shows exactly what it is.

16,403. That is what I thought. May I just call your attention to paragraph 45 of the Report of the Royal Commission of 1892: "All the companies except the Kent Company are dependent for some part of their supply upon water derived either from the Thames or the Lea. The supply of the New River Company from the River Lea is regulated by the River Lea Water Act of 1855, under section 27 of which Act a quantity of about 5,400,000 gallons daily is reserved for the navigation and as much as may be necessary in addition to keep up the head of water in each level of the river. The New River and East London Companies are empowered *pari passu* to take all the remaining flow of the stream. The intake of the New River Company is situated upon the River Lea, between Hertford and Ware locks. The navigation of the river does not extend above Hertford. At the intake," and so on. You see it says that a quantity of about 5,400,000 is reserved for the navigation?—Yes.

16,404. That is so, is it not, under the Act?—That is so under the Act.

16,405-6. In point of fact, I think there has been a little confusion as to how much you did send down this year. If you turn to the table put in in Mr. Restler's evidence at Question 15,324; in July, according to that table, there was an average daily discharge over Fiede's Weir of 13·9 million gallons; is that right?—Yes.

16,407. Now, I gather from your table at Question 15,926 that of that you took in respect of your own rights, so to speak, 9,479,000 gallons, and in respect of what was allowed you by the New River, 1,013,000 gallons; is that right?—Yes, that is quite right.

16,408. So that you took altogether about 10½ million gallons?—Yes.

16,409. Leaving, of course, 3·4 millions to go down the Lea?—No, what went down the Lea, so far as Hertfordshire was concerned, was 13,900,000.

16,410. Certainly, so far as Hertfordshire is concerned that is perfectly true, but of course this is merely to see how much you had left and how much the Lea was in fact depleted?—The river Lea was full to that extent during the whole of its course through Hertfordshire.

16,411. So I understand. Now, taking the same tables for August, there was a discharge over Fiede's Weir of 12·2 millions, and you took in respect of your own right, and the New River right, 11,700,000 gallons, leaving therefore about half a million gallons to go down the Lea?—Yes, I have no doubt that is right; I have not quite followed the figures, but I have no doubt you are giving them right.

16,412. In September there were 8 millions coming down, and you took of those 7,100,000?—Yes, that is quite right, but six millions of these were purchased from the New River.

16,413. Leaving about a million gallons?—Yes.

16,414. In October, I understand you to say that there were about 15 million gallons, of which you took about 10·7 millions, so that in no case were the statutory rights conferred by the Act of 1855 upon the River Lea Conservancy enforced?—The Lea Conservancy did not enforce them.

(*Mr. Pember.*) You will have noticed, my Lord, I dare say, that that section 27 which reserves the

quantities for the navigation is more or less a permissive clause. It is to the effect that the two companies or either of them shall not be allowed, without the consent of the Conservators, to draw beyond a certain amount.

(*Lord Robert Cecil.*) My Lord, I do not propose to discuss the clause; the clause is before you.

(*Mr. Pember.*) No, I understand. I merely called attention to that.

(*Lord Robert Cecil.*) If it becomes material, it will be for you to say what it means; but I submit that the construction given to it by the Royal Commission of 1893 is clearly right.

(*Mr. Pember.*) The only question I should like to have the Witness asked, my Lord, is one that might perhaps assist you in reference to an answer which was given to you yesterday.

(*Chairman.*) Pray put it.

Re-examined by Mr. PEMBER.

16,415. I do not know whether I am right or wrong in making the suggestion, but the fact that you have just mentioned that you are able to draw down your well at Walthamstow, was it, or at Waltham Abbey, in order to let the people get at the adits that you are driving—was it at Walthamstow?—At Walthamstow, and at Chingford as well.

16,416. At the same time the water is not so drawn down in the other wells. I do not know whether that affects in any way the question that was asked you yesterday as to whether you were not drawing from a common reservoir all over that valley; I gave it as my opinion that it was not so. I have made a rough diagram to try to make my meaning clear. It is a most difficult and complicated question, but this morning I have made this rough diagram showing the geology of the valley from the Thames to where the London clay crops out. It is at Hoddesdon where the clay crops out.

16,417. (*Chairman.*) Let me understand where Hoddesdon is?—Hoddesdon is beyond Broxbourne, rather higher than this map goes, but the London clay crops out just about there (*pointing to the diagram*). At that point Hoddesdon is 90 feet above Ordnance datum, and above mean tide in the Thames. The chalk is a very short distance from the surface at Hoddesdon. You will see here that the Ordnance datum line is marked with a red line. Any water getting into permeable strata at Hoddesdon, whether we pump it or not being 90 feet higher than the Thames, that water will naturally by gravitation find its own level, and as the level of the Thames is 90 feet below Hoddesdon, the water that we pump at the lower reaches here cannot affect, in my opinion, the river at Hoddesdon, because, whether it is 10 feet, 20 feet, or 30 feet below Hoddesdon the water will go downwards to a certain extent, and it is finding its outlet constantly at some point into the Thames. The chalk comes into the bed of the Thames within my company's district, and then any surplus waters getting down here, if we do not pump them, will go into the Thames and go away.

16,418. (*Lord Robert Cecil.*) You forget, Mr. Bryan, that you have already pointed out to me this morning that the water in the chalk where you take it is under pressure?—Certainly.

16,419. Which means that it cannot get away as fast as it is coming up; which means that that water must be travelling above the surface somewhere, which means that every drop you take is coming out of a spring?—No. That is due to the enormous friction of the water passing through the chalk. The friction is so enormous that you may sink a well here, and it will not affect the water level more than a foot or two at a well within half or three-quarters of a mile of it. That is our experience where the London clay overlies the chalk. This is the London clay, which is of enormous thickness throughout the whole extent of my company's district where their wells are sunk.

16,420. (*Chairman.*) If I understand your diagram aright, water in that chalk, which has come down from Hoddesdon, or above?—Yes.

16,421. In order to get out at all, must rise up, I do not know how high, but I see an angle there?—This is the Thames.

16,422. What is that lowest line?—This line is the level of the chalk. There is a great step in the chalk

at Lea Bridge. The chalk rises 70 feet and keeps back the water.

16,423. Is there any chalk above that lowest line?—No, the Thanet sands. It is sand from the green line to this.

(*Mr. Pember.*) There is the word sand on it.

(*Chairman.*) I cannot see it at that distance.

(*Mr. Pember.*) Just show my Lord the intermittent stratum which is marked "sands."

(*Witness, explaining the diagram to the Commissioners.*) This is the most extraordinary thing here, that the London clay has been washed away by the water rising up from the chalk. It has been washed away for about a mile in the bed of the valley. It does not exist there at Lea Bridge, but here it is from 70 to 40 feet thick, through which not a drop of water can percolate, so that, no matter what is running over the surface here, anything below cannot affect it.

16,424. (*Major-General Scott.*) Does the water filter into the sand where it is uncovered—at that point where the clay is denuded?—The surface gravels and Thanet sands meet here, and at this point the chalk is all broken, and is very soft all along its summit. The water has forced its way upwards through the chalk into the Thanet sands, and it is flowing along over the Thanet sands, and in the loose broken chalk, down towards the Thames. The general flow is from a north-west to a south-east line. I may say that all these levels have been got by actual borings.

16,425. Does that water continue to rise into the Thanet sands while you are pumping at Lea Bridge?—At the present moment the water is pumped down to the tunnel level at Lea Bridge.

16,426. (*Sir George Bruce.*) You have a well there (pointing)?—That is marked as a well. We keep the water down to about this level at the present time.

16,427. (*Major-General Scott.*) It does not rise into the sand while you are pumping, does it?—Yes. The water a quarter of a mile away is 50 feet up in the sands. We have bored holes every 200 yards, and we take the depths every morning, and within a quarter of a mile from this well the water stands more than 100 feet higher than the water in the headings.

16,428. (*Mr. Pember.*) It just occurs to me to ask you again while you are here whether or not the fact that you can so draw down one particular well, when, for your own purposes you want it empty—as you found with that well at Walthamstow—whether that shows that the effect of any particular well is local, and does not affect the whole of the water strata?—That is so, and to prove this, at our Walthamstow well we have put down a number of borings into the chalk at the same depth—eight or nine within a radius of half a mile. These are taken every morning and compared with the pumping, and in no instance have we found within even 50 or 60 yards from the end of the headings that the water has been drawn down to the level of the chalk, but it has stood 50 to 60 feet higher.

16,429. (*Sir George Bruce.*) Which is due to the friction of the water in the chalk?—To the enormous friction of the water in the chalk, and it also shows that the pumping of the water in our well at Walthamstow has a purely local effect on the water in the chalk stratum surrounding it.

16,430. (*Mr. Pember.*) What radius should you give the section of exhaustion, I think they call it, do they not?—The cone of exhaustion. I have had that plotted, and I find this, that within 100 yards of the end of the headings the depression is very slight indeed. I cannot give you the number of feet, because I have not the diagram here, but in most of these cases, within 100 yards from the end of the headings the water stands from 100 to 130 feet higher than the headings.

16,431. (*Chairman.*) Still, although the effect may be gradual and slow, the pumping from your wells must draw water that otherwise would fill this sand and chalk above?—It does deplete this basin to a certain extent provided it is not filled again by the flow from the upper reaches and from the rainfall, but the basin being so much lower than the river at this point, whether we pump it or not, the water goes down into this basin.

16,432. It will not benefit the Lea?—It will not benefit the Lea.

16,433. It will benefit the Thames?—It benefits the Thames because this point is 90 feet higher than its exit into the Thames. *Mr. W. B. Bryan.*

16,434. I mean all the water that you pump, say at Walthamstow, must have come down through this sand and chalk?—It must have done, certainly. *15 Nov. '98*

16,435. Therefore as you pump it you do to that extent deplete, although the effect may not be felt or observed above for some time?—Yes, that is so to a certain extent.

16,436. To the full extent?—No, I do not think it can. It is something like the cistern that I got wrong about yesterday. Suppose that this is the cistern that was talked of yesterday, and that we are pumping out of this cistern as fast as the water is coming in. If the water is running into the cistern down a river bed it does not make the slightest difference to the level of the water appearing down here, it only makes a difference in the cistern itself, because this has got an outlet at a level 90 feet lower than the inlet, so that we cannot make it lower at this point.

16,437. (*Mr. Pember.*) It goes into your outlet, i.e., it is drank instead of being taken into the estuary of the Thames or going out to the sea?—Yes, that is so.

16,438. (*Major-General Scott.*) There must be a translation from the upper region down to the point where you pump?—There must be. You cannot get anything from the surface because it is an impermeable apron.

16,439. Very well; if it did not continually supply your well, your well would become exhausted?—Certainly.

16,440. There must be a translation from distant points to the place where you are pumping?—The whole source of supply is from distant sources where this impermeable apron does not exist.

16,441. Quite so?—But its being impermeable from here to the 90 feet lower level the water goes down and gets away, whether by East London means or by natural means, simply by the outfall into the Thames.

16,442. (*Chairman.*) What I understand your point to be is this, that whatever effect what you take has, you are not robbing the Lea?—We are not robbing the Lea.

16,443. Because the Lea has lost it irremediably before you can get it?—That is my point.

(*Mr. Pember.*) Yes, it is the substitution of one outlet for another.

16,444. (*Mr. De Bock Porter.*) Does not your pumping there accelerate the exhaustion in the chalk? If you were not pumping there, would it not leave more in the chalk?—The friction through the chalk is enormous, as I have just explained, about this cone of depression which the learned counsel mentioned—it is so enormous that even a mile away we can scarcely trace it; and as our Walthamstow well is a great many miles from Hoddesdon it cannot possibly have any effect there.

16,445. (*Chairman.*) Wait a minute. Supposing you did not pump at all, then the whole of this sand and chalk would get saturated with water, which would slowly, on account of friction, escape into the Thames Channel and estuary?—Yes.

16,446. Very well; but being saturated with water it would take in no more above Hoddesdon?—If it were fully saturated it would take in no more.

16,447. Therefore any rain water that fell, instead of being absorbed into the chalk and sand, would get into the Lea above Hoddesdon?—Yes, it would in that case.

16,448. Then to that extent, and so far as you deplete your sponge of sand and chalk you never ought to take any more water than could otherwise get into the Lea?—Theoretically you do, but practically the friction is so enormous through the chalk that I do not think it makes a thousand gallons a day difference at this point.

16,449. (*Sir John Dorington.*) What formation—what is it that throws out the Amwell Springs?—The chalk.

16,450. The chalk is on the surface, is it?—It comes up to the surface there.

16,451. And is it thrown out at that point?—Yes, the chalk comes above the surface up at Hertford.

16,452. In fact the London clay does not go so far?—No, it ceases just south of Hoddesdon.

Mr. W. B. Bryan. 16,453. So that that is the water which has fallen into the chalk above the Amwell Springs, and finds a convenient exit at that point?—Yes.

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16,454. On the surface?—Yes.

16,455. And finally runs over the London clay into the Lea?—Yes, while the London clay is a good many miles south of Hertford, as I have just pointed out, and a good many miles north of my company's wells.

16,456. (*Mr. Pember.*) Is it not a fact that in the old days the East Indians used to take in their fresh water at Purfleet?—I do not know, but I have heard so.

16,457. (*Chairman.*) At where?—At Purfleet, where the chalk crops out again down in the valley of the Thames in the direction of Erith and Gravesend, and that part of the world.

(*Mr. Pember.*) And Grays—on the road to Southend it is.

16,458. (*Major-General Scott.*) What is your opinion of the effect of the pumping of the wells in the Lea Valley between Ware, and Hoddesdon where the edge of the clay begins?—I have not studied that question at all; I have only studied this connexion with my own company's wells.

16,459. You cannot answer that question?—No, I cannot answer that, because I have no data whatever to go upon.

16,460. (*Sir John Dorington.*) What is the distance of Hoddesdon from the Thames?—I can tell you in a moment from this diagram.

16,461. Is that to scale?—This is to scale, the distance is about 18 miles. This diagram is two miles to the inch.

(*Lord Robert Cecil.*) I do not know, my Lord, whether Mr. Bryan would be kind enough to let us have a

tracing of that diagram; we would make a tracing for ourselves. Of course, it is an important matter for Hertfordshire, what he has been saying lately.

(*Witness.*) Certainly, you can do so.

16,462. (*Mr. Pember.*) There is one question I should like to ask Mr. Bryan about the water reserved for navigation. Of course, the Lea Conservancy reserve what they think right for the navigation, and they reserve as much as is necessary to keep up the head?—They do.

16,463. For instance, supposing they insisted upon the river being kept up to a higher point, it would simply mean that the water would run to waste over the weirs, would it not?—It would run back again into the river from our intake to their overshoots over their weirs.

16,464. (*Lord Robert Cecil.*) Into the old river bed?—It is perfectly canalised to our intakes.

16,465. What there is over, if there is more than sufficient, goes down somewhere; if you sent down the 5,400,000 where would it go?—I think some of it would go down over the Lea Bridge Weir, and some of it would run into the tideway at Bromley, and do no good there at all.

16,466. (*Sir John Dorington.*) The mouth of the Lea is largely artificial, is it not, or are there two mouths?—The Limehouse Cut is quite artificial, and there is a lock at its entrance into the Thames. The old River Lea has a junction with the Limehouse Cut at Bromley Lock, and vessels coming up from the Thames through the old River Lea will come up on the high tide, and then the head water in the tide is the same as in the artificial cut. The lock is opened and the vessels pass through it on the tide; then the lock gates are closed, and if they want to go out again they go back through Limehouse Lock.

Recalled
Q. 23, f

The Witness withdrew.

Mr. M. W. Hervey.

Mr. MATTHEW WILSON HERVEY called and examined.

16,467. (*Chairman.*) Mr. Hervey, you are engineer to which company?—I am engineer to the West Middlesex.

16,468. How long have you been engineer to the West Middlesex?—Ten years.

16,469. Were you in their employment before?—Ten years previously as their assistant engineer.

16,470. You are a member of the Institution of Civil Engineers and of the Institution of Mechanical Engineers?—I am.

16,471. Will you give us the quantity of water that you have pumped during the summer months of this year from the Thames?—These figures are the number of gallons that we have pumped into the district from our works at Hammersmith. During the month of June we pumped 23,124,933 gallons; in July 23,917,011 gallons; in August 22,870,405 gallons; in September 23,504,445 gallons; and in October 21,372,626 gallons.

16,472. Those quantities were sufficient to supply all the wants of your district, were they?—They were sufficient to supply the whole wants of our district.

16,473. And the Thames is your only source of supply?—The Thames is our only source of supply.

16,474. You are authorised to draw from the Thames 24,500,000 a day?—That is so.

16,475. Will you give us the quantities you had to spare in those several months?—In June we had to spare 1,375,067 gallons per day; in July 582,989 gallons per day; in August 1,629,595 gallons per day; in September 995,555 gallons per day; and in October 3,127,324 gallons per day.

16,476. (*Mr. De Bock Porter.*) All those gallons are gallons of filtered water, I presume?—Yes, it is all filtered water.

16,477. They were considerably in excess of the quantities you pumped in 1897?—This year is larger than 1897.

16,478. Each month, I see?—Yes.

16,479. (*Major-General Scott.*) Could you add to that a statement of your capacity for filtering and of your capacity for pumping into your district, assuming that you had the water—roughly?—That would be ample.

We have finished this year four additional acres of filters, which make our total area for filtration 19 acres. With that number of acres we could easily treat 33 to 35 million gallons per day.

16,480. And your power of pumping into your district from Hammersmith?—That is ample for our requirements at present. We have practically very nearly a duplicate power of pumping—not quite a duplicate power, but very nearly.

16,481. Taking the ordinary amount of pumping that you could do without keeping something in reserve for a breakdown, what could you pump?—I should think 33 million gallons per day—that is, taking up the reserve engine power.

16,482. Altogether—nothing left?—There would not be much spare power then left.

16,483. That would not be safe for continuance?—No, it would not be at all prudent.

16,484. Supposing you were asked to supply another company for three months, or four months, about, could you pump for that time?—With unlimited supply from the Thames do you mean?

16,485. Yes, assuming your supply was not limited?—Then that would come, to a certain extent, to be restricted by the pumping mains into the district.

16,486. I was coming to the pumping mains?—Our extensions into our district now are taking another direction, that is, the country direction, so that to supply water into the London district, we should not have mainage enough for a very large quantity.

16,487. Can you form any idea as to what would be your own limit of supply to another company? We have had the limit already as regards the source of supply. Can you tell us what that limit would be from the other considerations which I am putting to you?—With the existing mainage?

16,488. Yes?—I should think five million gallons a day would be the outside.

16,489. Extra?—Yes.

16,490. But the filtering area is ample for a very large quantity?—That is ample for the time being.

16,491. Would the pumping power available enable you to deliver for a continuance five millions a day?

--I think we could manage five millions a day. Of course, if we had a breakdown of a large engine, it would very much alter the case.

16,492. (*Sir George Bruce.*) I suppose you can lay an additional main or mains if necessary?—We could do so. We have the power to break up the streets and lay mains within our own districts.

16,493. And if you require it to supply water to another company, you would do that?—We would have to do that.

16,494. Your mains at present are laid down simply for your own purposes?—For our own purposes.

16,495. (*Mr. Pember.*) But they would do 30?—Yes, I think so.

16,496. (*Mr. De Bock Porter.*) That is 50 per cent. more than your daily average of 1897?—Yes.

16,497. (*Chairman.*) Meanwhile your powers of pumping from the Thames limit the supply you could possibly give in the summer months to another company to a much smaller figure?—Much smaller.

16,498. It would be about a million and a half at most?—I have estimated it at a million and a half.

16,499. (*Sir George Bruce.*) And then, again, if you had to supply water to another company, your engines at present being on the basis of supplying yourselves, you would have to have extra engine power?—Or draw on our reserve engine power.

16,500. But you have not got a reserve, I understand, beyond 30?—No, not beyond 30—not with prudence.

(*Mr. Pember.*) He says he can do 30.

16,501. (*Major-General Scott.*) In fact, it comes to this—that unless you have got additional powers to take water and unless you constructed additional engine power, you could not give any material assistance to another company?—Not beyond that extent.

16,502. (*Chairman.*) Beyond what extent?—I named five million gallons.

16,503. (*Major-General Scott.*) Even that is absorbing all your reserve engine power, is it not?—It is taking a large proportion of the spare power—the reserve power.

16,504. Would it leave you in a safe condition as a working company if you were to reduce your engine power to such a small limit for, say, four or five or six months?—No, I think not.

16,505. That is what I mean; I think you will require an addition?—I think we should require more engine power if it were to be carried on for a long time.

16,506. Look at the case of the East London here. It has been getting assistance for 4½ months?—Yes.

16,507. Could you go on delivering to the East London for 4½ months, considering the pumping power that you have?—I think not—not for a large quantity—it would not be prudent.

16,508. (*Mr. De Bock Porter.*) But the five millions would not be available in the summer, would it, when the greatest pressure is upon your company?—It would be much more difficult then, of course, but I think it would be possible, if we had the mainage and other connexions with the companies to receive it. I think it is possible we might do it.

16,509. (*Chairman.*) If you had the mainage and had the right to draw more water from the Thames?—And had the right to draw more water from the Thames.

16,510. Your present powers of supply do not enable you to supply more than 1½ million?—Not during those four months of June, July, August, and September.

16,511. (*Mr. Pember.*) Are you taking into consideration the amount you get from your Staines Reservoir, of which you have a share?—I have not taken that into consideration.

16,512. That is about how much?—I think it is an average of 11 millions with a possible 15 millions by authority.

16,513. In fact, it is one-third of 35?—That is so.

16,514. (*Major-General Scott.*) For our present purposes the Staines supply cannot be taken into account, because it is a question of getting an auxiliary supply during the next three or four years, say?—That is so.

16,515. Within that time you would not have the Staines supply available?—No.

16,516. Then we may leave that out of account altogether?—Further than that, we are not in a position to pump more water from Hampton at the present time than we are doing. We are going to Parliament this year for power to lay another main from Hampton to our reservoirs at Barnes, to enable us to take this extra water which we shall derive from the Staines Scheme.

16,517. (*Chairman.*) You have given us now the figures to show your present pumping and filtering powers. You have also storage, I suppose?—We have storage.

16,518. What is your total amount of storage at present?—397,500,000 gallons.

16,519. Is that filtered water?—No, that is water from the river.

16,520. If you gave 1½ million a day to some other companies during June, July, August, and September, what quantity would be required for these four months?—183 million gallons. Taking the spare water during those months—June, July, August, and September—it would amount to 139,708,764 gallons, so that we should have to draw on our reserves to make up the quantity of 183 million gallons by 43,291,236 gallons.

16,521. (*Mr. De Bock Porter.*) Have you provided for the increasing calls upon you in connexion with new properties?—I have gone into that. The population in our district increases at an average of between 8,000 and 9,000 people a year, and that at 35 gallons per head will give 280,000 gallons per day.

16,522. (*Chairman.*) To follow up the figure I was first upon; you would, therefore, have to draw from store a deficiency of—I forget what you gave the figure as?—43,291,236 gallons.

16,523. (*Mr. Pember.*) That would be in 123 days?—122 days, is it not?

16,524. (*Chairman.*) That would deplete your storage, and reduce it from the amount you gave me just now to 354,208,764 gallons?—That is so. Then there is certain water we require at Barnes for sand-washing and waste off the filters, and one thing and another, which would amount in the four months to about 56,705,000 gallons, reducing the storage then to 297,503,764 gallons, which, at the rate of 23 million gallons per day, would be equal to 13½ days' supply.

16,525. That is, you would have in reserve for your own wants only 13½ days' supply?—That is so.

16,526. Do you consider that is reasonably safe for a period of drought?—I think it is the lowest point we ought to go to. I do not think we could afford next year, at the most, more than 1½ million gallons per day.

16,527. Neither next year, nor any year, until the Staines Reservoir is completed?—In the Bill we are promoting in Parliament this next session we are seeking powers to take an extra 5 million gallons a day from the river pending the completion of the Staines Scheme. If that becomes an Act, we shall be enabled then to have this extra 5 million gallons per day.

16,528. (*Mr. De Bock Porter.*) Do you consider that necessary to meet your immediate wants?—Yes; absolutely necessary, I think.

16,529. (*Major-General Scott.*) Then how can you spare it?—If Parliament empowers us to take 5 million gallons more from the river—

16,530. I understand you to say that that extra quantity you were going to take was necessary for your own wants?—We should then, of course, have a surplus.

16,531. (*Sir George Bruce.*) You want a margin?—We want a margin.

16,532. (*Mr. De Bock Porter.*) Is it a margin that you think you ought to have?—Yes, so as to enable us to fill up our reservoirs quickly when there is plenty of water in the river.

16,533. (*Chairman.*) What works would be necessary to enable you to supply for the next year or two that 1½ million gallons?—It would be necessary to lay Trunk Main No. 2 in the Scheme No. 2, and also Connexion No. 6a.

16,534. (*Major-General Scott.*) No. 2 is not your main, is it?—It is not, but we should only be able to send

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water to the New River Company, as we are doing now, by means of that main which would be laid from Campden Hill to Poland Street. We should deliver water into the reservoir at Campden Hill; and it would be carried from there, through this main, to the New River Reservoir at Clerkenwell.

16,535. Yes; but as far as you are concerned, your part of it would be finished when you got to Campden Hill, would it not?—Our part would be finished then.

(*Sir George Bruce.*) The water would go through all the same.

16,536. (*Major-General Scott.*) This main belongs really to the Grand Junction arrangement?—It is a scheme of interchange really in Scheme No. 2.

16,537. But this 24-inch main is the concern of the Grand Junction Company?—Quite.

16,538. (*Chairman.*) And the same observation applies to the connexion, I suppose?—The connexion would be between our main and the reservoirs of the Grand Junction Company at Campden Hill, which we should do ourselves.

(*Chairman.*) I see that Connexion No. 6a is a small thing, 625l.

(*Mr. Pember.*) That is really what Mr. Hunter said in answer to Question 15,761.

16,539. (*Major-General Scott.*) Can you supply for a continuance 1½ millions if this 24-inch main is laid?—I think we could.

16,540. Without any addition to your main from Hammersmith to Campden Hill?—Beyond the connexion I have referred to.

16,541. (*Chairman.*) I do not think we need go into what addition he could make when the Staines Reservoirs are finished; I think that is too far off. (*To the Witness.*) Have you considered this Scheme No. 2?—I have.

16,542. What do you say of it?—I agree with the evidence that has been given by other engineers, that it would make the interchange of water between the companies a capable scheme, and if any company required it, it would be there for their disposal. But as to whether each respective company is likely to require it, that is a matter I can hardly say, because we have not required it in the past, and, if we maintain our own works up to date, I do not see why we should require it in the future.

16,543. You do not think your own company would require it?—I do not think so, if we get power to take more water from the Thames, and our desire to lay another main from Hampton to Barnes is granted.

16,544. Wait; those are two large things. If you do not get power to draw additional water from the Thames, do you think you might require assistance from other companies?—I think that is possible.

(*Major-General Scott.*) Do you think so?

16,545. (*Chairman.*) Owing to the increase in your district do you mean, or why?—Unless we are enabled to lay another main from Hampton to Barnes, we should be unable to make use of the water from the Staines Reservoir Scheme.

(*Mr. Pember.*) By additional water from the Thames there, he means the additional water he is going to get from the Staines Reservoir.

(*Chairman.*) Do you—that will be no use for two years?

16,546. (*Mr. Pember.*) You are speaking for your own future supply?—For our own future supply. It would be very desirable that we should be allowed in the meantime, until the Staines Reservoirs are complete, to draw more water from the Thames.

16,547. As a temporary matter?—As a temporary matter; that is what we propose to ask Parliament.

16,548. (*Chairman.*) If you are in such a condition that you want to pump five million extra gallons daily from the Thames, how can you afford to give another company 1½ millions?—We shall not require five million gallons daily extra from the Thames at the present time.

16,549. When will you require it?—Each year, as the district increases, so we shall draw more from the river for our own requirements, and our object in being able to get an additional five millions from the Thames now is to fill our reservoirs when there is plenty of water in

the Thames, rather than being merely able to pump the water from hand to mouth, as we shall be doing bye-and-bye when our supply gets up to our full limit of 24½ million gallons. It is practically that now, as you will see from the figures I have given you.

16,550. (*Sir George Bruce.*) If it is thought desirable that all the companies should in some way or other be coupled up as regards their supplies, do you think that Scheme No. 2 is a good scheme to do that?—I think it is the best scheme that we can devise.

16,551. (*Major-General Scott.*) Then you approve of the principle of coupling up?—Yes, I think it would be very desirable as a means of insurance against break-down or failure.

16,552. Do you think it is worth while to spend half a million in this Battersea Scheme?—I think the amount might be modified.

16,553. The amount—including the purchase of the land and so on—amounts, does it not, to nearly half a million?—Yes, that is so, and to pay the interest.

16,554. Is it worth while, considering the benefit that might be derived from it, to incur this expense?—It is a very large expense, there is no question. I do not know that it is, perhaps, for me to say whether it is desirable or not.

16,555. Are you distinctly in favour of it?—As an insurance, yes; but for possible failure, as it has not occurred in the past, I do not see any necessity that it should occur in the future.

16,556. (*Mr. De Rock Porter.*) You have never had to go in the past for assistance to any other company?—No, we have not.

16,557. You consider yourselves in an exceptionally strong position, do you not?—We have always been in a position to meet the requirements of our district. From time to time, of course, it is necessary to extend the works, which we are always prepared to do, and shall have to do.

16,558. (*Chairman.*) I am not quite clear, in my own mind now, as to what this extra pumping from the Thames means. Do you mean that you could not give 1½ million gallons a day to this inter-communication system unless you got power from Parliament to pump five extra million gallons from the Thames?—I think we could spare it next year from the figures I have given you, but beyond that certainly not; because, you see, the mains between Hampton and Barnes are liable to break, and they do from time to time during the summer; and if one loses one main during the time of minimum supply, you are losing half your quantity that you are able to take from the river. Therefore it must, to that extent, deplete the reservoirs. It would be very unwise merely to have power to pump 24½ million gallons from the river.

16,559. (*Major-General Scott.*) What you mean is this: you are now only able to put into your reservoirs the balance of what you can take from day to day from the river—is that so?—Yes.

16,560. You are only entitled to take this 24,500,000 in each 24 hours?—That is all we can take from the river.

16,561. That is your limit in 24 hours?—Yes.

16,562. If you require for your district 22 millions —?—But we have required this year 23,124,000 gallons per day.

16,563. You are only able to store the small balance that is available?—That is it.

16,564. Therefore, it takes a very long time to get a store of water into your reservoirs; if a large quantity flows down the river, you cannot benefit by it, because you are limited as to the take every day?—That is so.

16,565. You want to get power to take something more every day, in order that you may put the balance into your reservoirs?—Yes.

(*Mr. Pember.*) What he wants to do is to get rid of the day to day limit—that is the great drawback.

16,566. (*Major-General Scott.*) That limit has been got rid of in the case of the Southwark and Vauxhall, has it not, in the last supply they got?—Yes, they can take it on an average.

16,567. And in the Staines Reservoirs Scheme, too?—Yes.

16,568. They are only limited to 100 millions a day, I think, in each case?—Yes.

16,569. They can take anything not exceeding 100 millions a day in each case—is not that so?—That is so, I believe.

16,570. (*Chairman.*) Provided the six months average does not exceed a certain quantity?—And with a certain flow going over the weirs.

(*Major-General Scott.*) That has nothing to do with the average; they are absolutely limited to 100 millions every day to put into their reservoirs; but the supply to their consumers is limited to an average over six months.

(*Mr. Claude Baggallay.*) The take from the river, in the case of the Southwark and Vauxhall, is limited to an average of six months.

(*Chairman.*) I thought so.

(*Mr. Claude Baggallay.*) On certain days you can take up to 100 millions, but on the average of the whole number of days in the six months you must not take more than the 20½.

(*Mr. Pember.*) 24½.

(*Mr. Claude Baggallay.*) 20½.

(*Major-General Scott.*) I have not read it in that way, but you are a better judge than I am.

(*Mr. Claude Baggallay.*) I happen to have drawn the section.

16,571. (*Chairman.*) There is a six months' average, not a daily one; they might draw up to 100 millions in one day; and there was also a limit that in six months the average must not exceed the 20½ millions. When the Staines Reservoirs are completed, would you then require the power to draw five extra millions from the Thames?—We are only asking for that power until the Staines Reservoirs are completed.

16,572. So that, practically, your power of contributing 1½ million gallons a day to this inter-communication stock, this common stock, depends upon your getting this Bill this year?—Yes.

16,573. (*Mr. De Bock Porter.*) Except for next year? Yes, except for next year: I think we could do it next year.

16,574. (*Major-General Scott.*) It occurs to me there is an advantage in this Battersea Scheme—Scheme No. 2—which I should like to ask you about. If the reserve of each company is put into a common stock in that way, and any company were to fall back upon the reserve of others, that would be an indication that that company was not in a proper condition as regards its own works, would it not?—I think so, certainly.

16,575. That would be a signal, as it were, that it was not in a proper position?—Yes, unless it was due, of course, to the breakdown of machinery or anything. That would be merely a temporary cause.

16,576. At the present time a company may go on apparently supplying its district perfectly well, and yet it may be working so near its limit that on the occasion of something like a drought, or even an accident, there may be a very serious restriction in the supply; is that not so?—Yes, certainly.

16,577. But this would prevent the effect of that sort of thing falling upon the consumers, because the company would then fall back upon the reserve of others, and the other companies would, no doubt, put pressure on that company to work up to its proper standard?—I think that is the object of the scheme.

16,578. (*Sir John Dorington.*) Under Scheme No. 3, the water, having been supplied by the Southwark and Vauxhall to the East London Company?—Pardon me, which is Scheme No. 3?

(*Chairman.*) Sir Henry Knight's.

16,579. (*Sir John Dorington.*) The water being supplied first of all to the East London on the assumption that the East London did not want it, could it be passed back through the New River system and through the Grand Junction system so as to do you any good in case you were in need?—I do not think that was proposed in Sir Henry Knight's Scheme.

16,580. I asked that question the other day of the Grand Junction representative?—If I followed it correctly, I do not think that was intended.

16,581. It was not intended. It only bears upon the question in this way: Is Scheme No. 3 adequate to meet any exigencies that might arise in other companies besides the East London?—I think it would be

if this trunk main No. 2 that I speak of is laid by the Grand Junction, and the connexion that we should have to make from our own main with the Grand Junction Reservoir at Campden Hill were made. That would in itself form a means of passing water to the Grand Junction, ourselves, the New River, or the East London, as we are practically doing to-day.

16,582. In fact, you might reverse the current and let it come back to you *via* the East London Company?—Yes, it would come back from the East London Company to the New River, I think, and from the New River to us.

16,583. Through the whole chain?—Yes.

16,584. (*Chairman.*) If so—if Scheme No. 3 avails to meet the wants of any company, why is it not much more eligible than Scheme No. 2, which is vastly more expensive?—I think Scheme No. 3 would meet the case, supposing each company has water to spare.

16,585. Every scheme supposes that the companies have some water to spare?—Not so Scheme No. 2, inasmuch as you can get 15 million gallons a day direct from the river at Hampton to Battersea, which could be distributed to any company requiring it.

16,586. I cannot follow that; if Scheme No. 3 establishes a means of communication all round the circle, the supplies of each company could travel that way and meet any want that arose?—I think it would be sufficient to meet any want, but not to the extent that Scheme No. 2 would, because it would be dependent on the amount of water that each individual company had to spare at that particular time.

16,587. So is Scheme No. 2, is it not?—I think not, because, as I say, you have the means of pumping water direct from the river at Hampton to the works at Battersea, and there we are able to distribute 15 million gallons a day to any company that requires it.

(*Chairman.*) But Scheme No. 2 does not enable you to pump any additional water from the Thames.

(*Mr. De Bock Porter.*) Scheme No. 2 contemplates the retention of certain works which would otherwise have been abandoned.

(*Mr. Pember.*) It is the distributing works that are superior in No. 2.

(*Sir John Dorington.*) Scheme No. 3 depends upon the Battersea works. If the Battersea works were abolished, they would be unable to supply the East London as they are supplying now.

16,588. (*Major-General Scott.*) This 15 millions a day which you suppose to come from the Thames must be a part of the statutory right of supply from the Thames, must it not?—We should require, I take it, powers to take additional water from the Thames to make the scheme available.

16,589. (*Chairman.*) Do you say additional pumping power from the Thames is necessary for Scheme No. 2?—The pumping power exists at Hampton—that is included in the whole scheme; and that pumping power at Hampton which now exists will be obsolete when the Southwark and Vauxhall Company have their new works in order.

16,590. (*Sir George Bruce.*) As the population of London increases, you must pump more water from the Thames if you are going to give people water at all, as long as the Thames is your source of supply?—No doubt, we must.

16,591. The quantity must increase year by year?—It must.

16,592. If the people are to get water, your powers of pumping must increase, or else they will not get it?—That is so.

16,593. (*Major-General Scott.*) Taking it all round, as the present time there is a statutory right to take to the extent of 185½ millions, is there not?—Yes.

16,594. There is a surplus of something considerable at the present time compared with the daily supply?—Yes, the largest surplus being that of the Chelsea Company, of which you will hear from the engineer of the Chelsea Company when he comes.

16,595. The supply now taken from the Thames amounts to something like on the average 114 million gallons a day, does it not?—Yes.

16,596. And the total supply authorised by statute is 185½ million gallons a day?—Yes.

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Mr. M. W. Hervey. 16,597. And the margin between 114 and 185½ is or will be a surplus?—Certainly.

15 Nov. '98 16,598. To that extent you might put 15 million gallons a day into Battersea or anywhere else from that difference, might you not?—If the Southwark and Vauxhall Company have the power to take that quantity of water in addition to the quantity they want for their own supply.

16,599. By arrangement amongst yourselves—by inter-sale or in some other way—you could, without increasing the statutory limit of take, provide 15 million gallons for Battersea, could you not?—I understand not, because the power of inter-sale as far as I understand it, merely extends to filtered water and not to one company taking water from the river. They have to take it as filtered water from another company.

16,600. (**Mr. Pember.**) Is that in the statute?—I am always given to understand so; I do not know whether I am right or wrong.

(**Mr. Freeman.**) That is so.

(**Mr. Balfour Browne.**) That is our contention, certainly. The inter-sale is only of the filtered water that they have in their reservoirs to spare.

(**Witness.**) I do not know.

(**Chairman.**) I cannot understand where the necessity for extra pumping power comes in, when you have got the wide margin that General Scott has just pointed out. The companies altogether can pump 185½ million gallons.

(**Major-General Scott.**) But that includes the Staines Reservoirs, which is, I think, 35 million gallons.

(**Mr. Balfour Browne.**) Our contention, of course, if I may be allowed to intervene, is that the companies have no such right as General Scott has been suggesting. Each company has a right to pump for its own district an amount necessary for that district. This company cannot go above 24½ million gallons, but we say it has no right to pump 24½ millions unless that 24½ millions is required in its own district.

(**Chairman.**) That simply points to doing away with the restrictions of inter-sale.

(**Mr. Balfour Browne.**) Yes, my Lord; it means an Act of Parliament.

(**Chairman.**) Yes, it does.

(**Mr. Pember.**) And I think we have always been agreed on this point of the restrictions.

16,601. (**Chairman.**) What puzzles me is your demand for extra pumping power. (*To the Witness.*) Supposing the restrictions upon the inter-sale of filtered water and upon inter-communication between the different systems were done away with, what need is there of extra pumping power within the next few years?—To take water from the river. We can only take 24½ million gallons in each 24 hours.

16,602. I know?—That is not enough.

16,603. As General Scott has pointed out, altogether you have got power—I will not say to take 185½ million gallons, because that includes Staines—

(**Sir George Bruce.**) One hundred and fifty million gallons, say.

16,604. (**Chairman.**) You have got power to take 150 million gallons from the Thames, and at present you abstract from the Thames only 114 million gallons, so there is a margin that you can put into your inter-communication system?—If we have that power; but I do not know that we have.

16,605. (**Mr. Pember.**) If you remove the restrictions, you have got what you demand?—If the restrictions are removed; but as far as I understand, at the present time, my company is unable to take more than 24½ million gallons in any 24 hours.

(**Chairman.**) Of course not. But that, and the similar powers of other companies, brings the total up to 150 million gallons.

16,606. (**Sir George Bruce.**) I suppose you are speaking, as it were, for yourself and your own company?—Certainly.

16,607. You pump 23 millions, and you have power to pump 24½ millions?—That is so.

16,608. Therefore, you say that you, the West Middlesex, can only give 1½ millions more?—Yes.

16,609. You say that if you have to give more than 1½ millions, you, the West Middlesex, must have power to pump more than 24½ millions?—Under any circumstances, for distribution in our own district we require further powers until the Staines Reservoir is complete. I do not think it is safe merely to rely on the small margin we have at the present time.

16,610. (**Major-General Scott.**) I put it in this way, and I think, perhaps, that may settle it. Supposing all restrictions are removed as regards interchange of water between the companies so far as statutory powers go at present, if all the companies together have the power of giving water, or of transferring part of their rights to take water from one to another, will they collectively have enough to put into Battersea?—I do not think it is intended to put it into Battersea.

16,611. The scheme is to put 15 million gallons a day into Battersea?—That would be by pumping engines at Hampton which are now in the possession of the Southwark and Vauxhall Company, and which would still be retained for that purpose. My company would have nothing to do with putting any water into the reservoirs at Battersea.

16,612. I am speaking of the scheme generally as if you were all concerned in it, and all desired to carry it out, and all combined to carry it out. I am not referring to what particular company pumps that particular water; I am merely referring to the question, does the statutory right at present existing give you power to spare that water to put into Battersea, assuming that everybody has a right to exchange water?—Yes, I suppose it would. If there is that difference between 114 million gallons and 150 million gallons, there would be still 36 million gallons to be distributed among the respective companies.

(**Major-General Scott.**) Exactly.

16,613. (**Chairman.**) But under Scheme No. 2 you would contemplate supplying this Battersea Reservoir with 1½ million gallons a day?—No, certainly not; we should supply that million and a half gallons per day direct to any company that required it. That company, if it required more, would get extra assistance from the Battersea works pumped direct from Battersea to that particular company.

(**Mr. Pember.**) The fact is, there are two different sources of assistance; one is what he can give within his own limits with the balance of the 24½ millions, and that, as he says, would have nothing to do with Battersea; the rest is what Battersea could do by the utilization of the difference between the 114 million gallons, or whatever it is, and the 150 million gallons until Staines is made.

(**Chairman.**) Yes; but he is part of the 150 million.

(**Mr. Pember.**) Yes, he is.

(**Chairman.**) And his assistance could not pass through Battersea.

16,614. (**Mr. Pember.**) Not the balance of the 24½; that is what you mean?—That is so.

(**Mr. Pember.**) He would send that straight himself.

(**Witness.**) May I call your attention to the fact that the 114 million gallons a day that you have spoken of, you have taken on an average, have you not?

(**Major-General Scott.**) Yes.

(**Witness.**) During the maximum supply of summer, the quantity drawn from the Thames is 135 million gallons a day.

16,615. (**Major-General Scott.**) Then you could put more into the Battersea Reservoir?—Not during the time of maximum supply.

16,616. But on the average, could you not put in that quantity?—Probably the assistance would be required during the time of maximum supply; therefore, I think the amount of water still to be drawn from the river is merely the difference between the maximum take of 135 millions and the 150 millions.

16,617. There would be no storage in fact?—Very little storage, I think, in the Battersea Scheme.

16,618. (**Chairman.**) At any rate, I take it that any contribution of yours to any scheme of inter-communication would have nothing to do with Battersea?—Not necessarily, unless it was given to the companies south of the river; then it would be passed from the Campden Hill Reservoir to the reservoir at Battersea, and it

would be pumped from there again to the companies on the south side of the river. But if we were rendering assistance to any company on the north side of the river, we should supply this million and a half gallons direct to them, and that amount would be supplemented from the Battersea works direct.

16,619. (*Major-General Scott.*) The reserve power of pumping of the Southwark now is very large, is it not?—I think it is; but I do not know what their surplus would be at the time of maximum supply, and I could not answer that question.

Cross-examined by Mr. BALFOUR BROWNE.

16,620. As I understand you, your company has never been short of water?—No.

16,621. And at the present time it has a margin?—A very small margin.

16,622. Your idea is that, for safety, that margin ought to be greater?—Yes.

16,623. But that is for your own purposes?—For our own purposes till the Staines Reservoirs are complete. That would give us a larger surplus if it was necessary to render assistance to any other company.

The witness withdrew.

Mr. RICHARD HACK called and examined.

16,630. (*Chairman.*) You are a member of the Institution of Civil Engineers, and chief engineer to the Chelsea Company?—That is so.

16,631. How long have you been engineer to the Chelsea Company?—Thirteen years.

16,632. Your powers to take from the Thames are 22 million gallons a day at West Molesey?—That is so.

16,633. Then we have to add your emergency intake at Seething Wells?—Yes.

16,634. Your power to pump at which is limited to cases of accident or failure of your works or mains or cases of emergency?—That is so.

16,635. I suppose one may take the meaning of that to be cases of emergency affecting yourself as well as in cases of emergency affecting some other company?—Affecting our company alone—a case of burst mains, for instance.

16,636. What did you pump from the Thames for your own purposes in the year 1897?—Shall I give it to you monthly?

(*Chairman.*) Could you not give me the daily figures?

(*Mr. Rickards.*) We can give you both, my Lord; if you desire it by the month as well.

16,637. (*Chairman.*) What is your daily average?—The daily average is 12,283,789.

16,638. Perhaps it would be as well to get the figures for the months of stress and pressure, namely, June, July, August, and September of this year?—It was 12,358,121 for June of this year; 13,225,278 for July; 12,530,760 for August; and 12,673,270 for September.

16,639. I see your highest there is 13 millions odd?—Yes.

16,640. So that you have pumping powers for an extra 10 millions very nearly, you may say?—Yes, 8½ or 8¾ millions.

16,641. On your annual average you have a surplus of very nearly 10 millions?—Yes, on the annual average it is so.

16,642. Now, then, as to your mains and filtering plant; what number of millions in the summer time—the time of drought—could you filter and send away?—From Molesey we could deal with the whole 22 millions, and deliver to Surbiton on to the filters, where our district engines are situated.

16,643. Have you filtering plant for 22 millions?—No. We could deliver 22 millions from Molesey. We have sufficient plant—mains and engine power—to send 22 millions to Surbiton.

16,644. How much could you filter?—We can only filter 17 million gallons of water.

16,645. Are you increasing your filtering power?—Just now we are not increasing it, but we have just

16,624. But you are not going to Parliament for a Bill to supply other companies?—No.

16,625. Merely to get what you consider a proper margin for your own supply?—Yes, quite so.

16,626. As I understand, looked at from your point of view, there is no necessity for any such scheme as 1, 2, or 3—no necessity so far as your company is concerned?—I think not, at the present time, so far as my company is concerned; but one never knows what misfortune may befall one.

16,627. No; but you said, that looking at the future and judging it by the past, you thought it was unnecessary for your company?—Excepting as an insurance.

16,628. We will take the million and a half; if you pump the water from the Thames and hand it over to the East London, a person living in a 37l. 10s. house would have to pay 3l. 1s. 10d., while if you supplied direct, he would pay 1l. 19s. 8d.?—I take it from you that those are the differences in the charges between the East London Company and the West Middlesex.

16,629. You are, of course, paying your maximum dividend, have no arrears, and have really reduced the price of water?—We have.

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completed one filter-bed an acre in extent, which has brought us up to that 17 millions.

16,646. Are you going beyond that?—We have reserved land at Surbiton to the extent of eight acres, for the purpose of extending that.

16,647. How long would it take you before you could filter more?—In 12 months' time we should make sufficient extra filtering plant for the whole quantity.

16,648. For the 22 millions?—Yes.

16,649. (*Mr. De Bock Porter.*) At the present time you can filter 5 millions more than your daily needs?—That is so, taking the average quantity.

16,650. (*Chairman.*) Therefore the only contribution you could at present make to any inter-communication scheme is 5 million gallons a day?—Yes, on the average.

16,651. On the average and in times of drought in such summer months as we have had this year?—On the maximum we run up to 16 millions and at those times we could only afford 1 million.

(*Mr. Rickards.*) That is, the maximum in any one day, my Lord, is 16 millions as compared with the average maximum for a month.

16,652. (*Chairman.*) How much could you afford on an average of four such months as this last June, July, August, and September?—On the average we should want 15 millions, so we could afford 2 millions.

16,653. Two millions?—We could afford safely 2 millions on the average of those four months.

16,654. So, if we had next year such another summer as we have had this year, all you could do would be to give 2 millions to the needs of other companies?—That is all.

(*Mr. Pember.*) I cannot help thinking he has given a wrong answer.

(*Chairman.*) I do not know.

(*Mr. Pember.*) Surely he said the highest average month was just 13 millions, now he says on an average he could not give more than two, but the difference between 13 and 17 is four.

(*Mr. Rickards.*) Will you allow me to explain?

(*Chairman.*) No, I would rather have the Witness explain it.

(*Witness.*) I think you should not drive us right out to the very 4 millions; I think it would be wise to reserve some for our own use. But if you take it on the 13—, and it is even more than 13—, I should say that three at the very utmost is what we could spare.

16,655. (*Major-General Scott.*) Could you spare that for four months running?—Yes. That would be an average. There are some times when we could not spare the whole of that—some days or some weeks. On the whole of the four months we could spare an average of 3 millions a day.

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16,656. (*Mr. De Bock Porter.*) Did you not state just now that the largest supply in any one day is 16 millions?—That is so.

(*Mr. De Bock Porter.*) Then there is only 1 million margin?

16,657. (*Major-General Scott.*) If you could supply an average of 3 millions for several months, that would mean that on some occasions you could spare more than 3 millions?—Yes, on some occasions when our supply became nearer to the minimum, we could supply more.

16,658. Could you deliver that into your district from Putney?—We could deliver the same amount. We can deal with the 17 millions also with the mains between Surbiton and Putney, the same as we can filter 17 millions. That is the greatest capacity of the mains.

16,659. You could not deliver more across the river?—No.

16,660. Then the surplus could not be available for another company if you could not deliver it across the river, could it?—

(*Mr. Pember.*) You could deliver the 17 millions?—We could deliver the 17 millions.

16,661. (*Major-General Scott.*) Where would it leave your district and go into the other company?—It would leave our district at the Upper Richmond Road by Scheme No. 2, but we should give help through the Southwark and Vauxhall Company's mains to the East London. That is the only way.

16,662. (*Chairman.*) Where are you on that map? Could someone point out where your contribution to the companies would come in. You are north of the Thames?—Our district runs there, where the broad red band is.

(*Mr. Pember.*) The works are south of the Thames and the supply north.

(*Witness.*) It is the black that lies in the hollow there—the black under the word "Hammersmith."

(*Mr. Rickards.*) Between Hammersmith and Battersea, is it not?

(*Witness.*) Just north of Battersea.

16,663. (*Chairman.*) You get your water where—at Molesey?—At Molesey.

16,664. Then you cross the Thames, do you?—Yes.

16,665. Your main crosses the Thames?—Yes, it crosses the Thames at Putney.

16,666. To your Putney Heath reservoir?—Yes.

16,667. Is it there you filter?—No, at Surbiton.

16,668. Then you send filtered water to Putney?—Yes, the filtered water storage is at Putney.

16,669. How would any surplus water that you had get to this Battersea reservoir?—Through the Southwark and Vauxhall mains. I am not sure that it would get to the Battersea reservoir, but it would get to the East London Company by the Southwark and Vauxhall mains.

(*Mr. Pember.*) The Southwark and Vauxhall mains and their mains are both in the Upper Richmond Road.

16,670. (*Mr. Rickards.*) They cross?—We meet.

(*Chairman.*) Here again would be a contribution that would not go into Battersea.

(*Mr. Pember.*) Yes, it would go into Battersea by the Southwark and Vauxhall mains.

(*Mr. Balfour Browne.*) The Witness said no.

(*Witness.*) I think it would not.

16,671. (*Major-General Scott.*) What main would you connect with the Southwark and Vauxhall?—A 24-inch main at the Chelsea Company with a 36-inch or a 30-inch of the Southwark and Vauxhall Company.

(*Mr. Pember.*) It is Connexion No. 16 in Scheme No. 2. That gives you the connexion in the Upper Richmond Road.

16,672. (*Chairman.*) I should like to follow it on the plan, or else I cannot understand the scheme. That is a main that runs from Hampton to Wandsworth and Battersea, is it?—That is the 30-inch for the supply of filtered water to the Southwark and Vauxhall district.

16,673. (*Major-General Scott.*) Would you deliver your filtered water into an unfiltered water main?—No, into the 30-inch.

16,674. (*Chairman.*) Into the 30-inch main?—Yes.

16,675. And so it would get to Battersea?—Yes.

16,676. And on the other hand, as I understand you, you would have some means of sending water direct to the East London, for instance, without going through Battersea?—I am not at all certain that the water supplied in these mains of the Southwark and Vauxhall from the Chelsea system would go to Battersea at all.

16,677. How would it go then?—It would go through and be passed on to the East London through their service mains.

16,678. (*Major-General Scott.*) Filtered water?—The filtered water.

16,679. The filtered water would naturally go to Nunhead, would it not?—Yes, filtered water would go through all those mains at Nunhead.

16,680. (*Chairman.*) And then from Nunhead it would go through the tunnel to the East London for instance?—That is as I understand.

16,681. (*Mr. De Bock Porter.*) What is the level of your Putney Heath reservoirs—185 feet?—175 feet.

16,682. (*Major-General Scott.*) Is your pressure at the point of connection with the 30 inch main superior to the Southwark and Vauxhall pressure?—It is inferior.

16,683. Then the water of the Southwark and Vauxhall Company would flow into your main?—In the day time we are superior; in the night time we are inferior, I believe.

16,684. Then you would have to have a man to shut off the connexion at a certain time every day?—Yes, the supply will have to be given in accordance with the times when the pressure in the Southwark and Vauxhall main is drawn down by the draught in the district. As I understand it we could only give them a supply, or they give us a supply, they in the night time, and we in the day time.

16,685. Your power of supply would be limited to half the 24 hours then?—Yes, thereabouts.

16,686. How much would that give, have you made any calculation as to the amount?—How much we could give?

16,687. Yes, in that way?—We could give all that the Southwark and Vauxhall could take. We have sufficient power at that point of the connexions to put in 6 millions, I dare say, but mind I do not say we can supply it.

16,688. Six millions in 12 hours?—No, 3 millions in 12 hours I would rather put it.

16,689. You have just stated that the main would only be available for delivery to the Southwark and Vauxhall Company for half the time?—Yes; 3 millions for the 12 hours.

16,690. (*Chairman.*) That limits your possible contribution to this inter-communication scheme to 3 millions?—Yes.

16,691. Taking it altogether there are not two places at which you could contribute, or are there?—The proposed No. 1. trunk main from Battersea crosses the Chelsea Company's district mains nearly opposite the Battersea works, not far, at any rate, from it; and there it is proposed, I believe, to connect with two 24-inch mains of the Chelsea Company, and so get a supply from the trunk main from Battersea into our district, in case of failure there.

16,692. In case of failure in your district?—Yes; the other proposed connexion in the Upper Richmond Road would be more helpful on the other side of the river to the Southwark and Vauxhall, or to the East London through their system.

16,693. I gather from the figures you have given us, that you do not want this inter-communication scheme for yourselves?—No, we do not want it at all.

16,694. Do you think it desirable on any ground?—Yes, I think it is desirable. It is desirable in case of breakdown with our own mains in the district. I think it is as well that we should have that connexion made. It may be useful in case of breakdown. Hitherto we have had no trouble in connecting up our own mains. I think it would be very valuable.

16,695. Do you think it is worth while spending half a million for that purpose?—Perhaps not for the Chelsea Company. We are only connected in that one way; that is, that we get a supply in one of the trunk mains, but really we are not a contributing company.

16,696. You are the most contributing company, according to what we have heard. We have looked upon you as good for 10 millions?—Yes, but we are out of No. 2 as far as that is concerned.

16,697. What?—In the scheme now in existence I think it is out of it.

16,698. What is out of it?—Our surplus water; we can only give one million.

(Mr. Pember.) In Scheme No. 2, any supply from the Chelsea was not taken into consideration. You have got Mr. Collins' evidence.

(Chairman.) I have not got Scheme No. 2 before me. I have had a print put into my hand, but whether that is Scheme No. 2 or not nobody has told me.

(Mr. Pember.) I almost think either Mr. Collins or somebody else has supplied it.

(Chairman.) It was put in after Mr. Collins left the box. Mr. Collins did not put anything in writing about it. He said he had no authority to do it. Am I to take it that this print that has been handed to me, I do not know by whom, but handed to me through the Secretary, is Scheme No. 2?

(Mr. Pember.) Yes, my Lord. If you remember, at the time Mr. Collins was in the box, the scheme had not been approved by the chairmen.

The Witness withdrew.

(Mr. Pember.) The trouble is—I do not know that it is anybody's fault, my Lord—but the companies sent that as an official communication from all the companies concerned, and they thought that probably would be enough. However, I think, perhaps, Mr. Hunter or Mr. Collins should be re-called.

Mr. ERNEST COLLINS recalled and further examined.

16,700. (Chairman.) Does this print contain Scheme No. 2, referred to in your previous evidence?—Yes.

16,701. Is it now approved by all the companies?—Yes. It has been sent in with the knowledge of the Chairmen.

(The following is the document referred to.)

AMENDED REPORT OF ENGINEERS OF THE LONDON WATER COMPANIES, prepared in view of events which have happened since their Report, dated October 1897, on the proposal to make interchangeable connexions between the mains of the several companies.

At a meeting held on Monday, October 24th, 1898, information was obtained from Mr. Restler, the engineer to the Southwark and Vauxhall Company, to the effect that owing to peculiar circumstances that Company had at disposal of the whole of their plant at Battersea, capable of providing filtration for 15,000,000 gallons daily, and pumping power complete for about 25,000,000 gallons daily.

Taking this fact into consideration, it was therefore deemed expedient that the Battersea works should act as a central station for filtration and distribution for the assistance of the companies.

Upon the basis of these works being available, the following system of interchangeable supply would be possible, necessitating the provision of the following trunk mains and connexions.

Trunk Mains.

	£
No. 1. A 30" main from Battersea works to Campden Hill, about 6,380 yards in length and estimated to cost, at 6l. 2s. 6d. per yard, 39,078l., with an addition of, say, 12,500l. for crossing the Thames, or a total amount of	51,578
This includes connexions at the points where the 24" mains of the Chelsea Company are crossed.	
No. 2. A 24" main from Campden Hill to Poland Street, about 5,100 yards, at 4l. 5s. per yard	21,675
No. 3. A 30" main from Battersea works to the "Angel," Islington, in connexion with New River Company's	

(Chairman.) I have that perfectly in my mind, and that is why I say it has never been proved.

(Mr. Pember.) I am not clear that it has.

(Mr. Freeman.) It is not on the notes.

(Chairman.) It has never been put in by anybody.

(Mr. Pember.) It was sent to you as a document.

(Chairman.) Yes, it was sent to us as a document, but I do not know in the least what it is. It is headed "Amended Report."

(Mr. Pember.) Instead of wasting your Lordship's time by examining this gentleman, it might be as well to put Mr. Collins in the box, or Mr. Hunter, just to clear up the matter and show what Scheme No. 2 is.

(Chairman.) Has anybody any question to put to this gentleman?

(Mr. Balfour Browne.) I do not want to ask any question.

(Mr. Rickards.) Will your Lordship allow me to put one question?

(Chairman.) Yes.

16,699. (Mr. Rickards.) The maximum amount of 16 million gallons pumped from the Thames was only reached on one day, I think?—Only on one day; that was the 2nd of July

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Recalled,
Q. 29,033.

(Mr. Balfour Browne.) In that case, my Lord, it might be useful to have it on the notes.

(Mr. Pember.) Certainly.

(Chairman.) Certainly, I want to get it on the notes.

Mr. E. Collins.

	£
Crouch Hill system, about 8,800 yards, at 6l. 2s. 6d. per yard, 53,900l. (providing for duplication across the Thames), 12,500 addition	66,400
No. 4. A 30" main from Battersea works to Brixton Hill, about 3,960 yards, at 6l. 2s. 6d. per yard	24,255
No. 5. A 30" main from Nunhead Reservoir to the Tower Subway, about 5,700 yards, at 6l. 2s. 6d. per yard	34,913
No. 6. A 21" main from Hammersmith to Campden Hill to enable the West Middlesex Company to deliver 3,000,000 gallons per day into Campden Hill Reservoir.	
Estimated cost	10,500
No. 7. A 24" main, about four miles in length, to enable the Grand Junction Company to deliver 3,000,000 gallons per day extra into Campden Hill Reservoir.	
Estimated cost	25,000
Total for trunk mains	234,321

Connexions.

These are similarly numbered and described in former report.

No. 6A. (6 in former Report). A connexion between the West Middlesex Company's main in the vicinity of Campden Hill and the Grand Junction Company's Campden Hill Reservoir.	
Estimated cost	625
No. 8. A connexion already exists by which the Grand Junction can pump directly into the mains of the East London and vice versa.	
Cost	Nil
An arrangement also exists by which water can be delivered by the East London Company to the New River Company from their 30" main in Seven Sisters Road into the New River.	
Cost	Nil

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No. 9. A connexion at Raynes Park between the 42" main of the Southwark and Vauxhall Company and the two 30" mains of the Lambeth Company.	Estimated cost	2,000
No. 10. A connexion at Leigham Court Road, Streatham, between the 21" main of the Lambeth Company and the 42" main of the Southwark Company.	Estimated cost	375
No. 11. A connexion at Kennington Gate between the 20" and 24" mains of the Lambeth Company and the 30" and 24" mains of the Southwark Company.	Estimated cost	875
No. 12. A connexion at Manor Park, Streatham, between the Streatham works of the Southwark Company and 12" main of the Lambeth Company.	Estimated cost	187
No. 13. A connexion between the 12" main of the Lambeth Company in Park Road, Forest Hill, and the 12" main of the Kent Company in High Street, Lewisham.	Estimated cost	4,250
No. 14. A connexion between the 12" main of the Lambeth Company at Beckenham and the 12" main of the Kent Company at Shortlands.	Estimated cost	2,250
No. 15. A connexion at Peckham between the 18" main of the Kent Company and the 20" main of the Southwark Company.	Estimated cost	7,338
No. 16. A connexion at Upper Richmond Road, Putney, between the 24" mains of the Chelsea Company and the 30" and 36" mains of the Southwark Company.	Estimated cost	625
No. 17. A connexion at London Road, Kingston, between the 42" main of the Southwark Company and the 30" and 24" mains of the Chelsea Company.	Estimated cost	1,250
No. 19. A connexion at Surbiton between the 30" main of the Lambeth Company and the 30" main of the Chelsea Company.	Estimated cost	625
No. 20. A connexion at Kingston Hill between the two 12" mains of the Lambeth Company and the 30" and 15" mains of the Chelsea Company.	Estimated cost	625
Total for connexions		21,025
Total for trunk mains		234,321
Grand total		255,346

The means of inter-communication would be as follows, but it will be understood that the figures given are approximate and may require reconsideration as to details:—

RECEIVING COMPANY—THE CHELSEA.

Assistance could be rendered to this Company through connexions with Trunk Main No. 1 crossing the 24" mains of the Chelsea Company, by which water could be delivered from the Battersea centre to the extent of . . . 10,000,000

£

Failing this, 10,000,000 gallons could be delivered from Campden Hill by means of these connexions, the Grand Junction Company contributing 3,000,000 gallons, the West Middlesex Company 3,000,000, and the New River Company 4,000,000.

Further assistance could be rendered to the Chelsea Company by connexions Nos. 16, 17, and 19, which provide for an interchange of water between the Southwark and Chelsea and Lambeth and Chelsea Companies.

RECEIVING COMPANY—EAST LONDON.

Assistance could be rendered to this company as follows:—

	Gallons per day.
From the New River Company at Lea intake	6,000,000
From the Grand Junction Company	3,000,000
From the West Middlesex Company	8,000,000
Total delivered from New River Head to be passed on to East London Company by Lea intake	6,000,000
From the Southwark Company per Tower Subway Trunk Main No. 5 supported from Battersea centre	8,000,000
Total	20,000,000

Further assistance could be rendered to the East London Company by existing connexion with Kent Company at Blackwall to the extent of 500,000 gallons per day.

The Chelsea and Lambeth Companies in the event of failure of the foregoing proposals, by means of Connexions 16, 17, 9, 10, 11, 12, could assist the Southwark Company, which in turn, could assist the East London with water so provided.

RECEIVING COMPANY—GRAND JUNCTION.

Assistance could be rendered to this company:—

	Gallons per day.
From New River Company per Trunk Main No. 2	6,000,000
From West Middlesex Company	3,000,000
From Battersea centre per Trunk Main No. 1	10,000,000
Total	19,000,000

RECEIVING COMPANY—KENT.

	Gallons per day.
Assistance could be rendered by means of connexions Nos. 13 and 14 from the Lambeth and No. 15 from the Southwark Company to the extent of, say	4,000,000
These in turn could be supplemented from the Battersea centre.	

RECEIVING COMPANY—LAMBETH.

	Gallons per day.
Assistance could be rendered from Battersea centre per Trunk Main No. 4 to the extent of	10,000,000
From the Grand Junction Company per Trunk Main No. 1 from Campden Hill direct to Brixton	3,000,000
From West Middlesex Company per Trunk Mains Nos. 1 and 4	3,000,000
From New River Company via Campden Hill	4,000,000
Total	20,000,000

This could be supplemented from Chelsea Company by connexions 19 and 20 and from Kent Company by Nos. 13 and 14.

RECEIVING COMPANY—NEW RIVER.

	Gallons per day.
Assistance could be rendered to this Company from Grand Junction Company per Trunk Main No. 2 - - -	3,000,000
From West Middlesex Company per Trunk Main No. 2 - - -	3,000,000
From Battersea centre per Trunk Main No. 3. - - -	10,000,000
Further assistance could be rendered by East London Company through existing connexion with New River at Seven Sisters Road to the extent of - - -	4,000,000
Total - - -	<u>20,000,000</u>

RECEIVING COMPANY—SOUTHWARK AND VAUXHALL.

	Gallons per day.
Assistance could be rendered to this Company from the Battersea centre - - -	10,000,000
From the New River, West Middlesex, and Grand Junction Companies per Campden Hill - - -	10,000,000
Total - - -	<u>20,000,000</u>

Assistance could also be given by the Lambeth and Chelsea Companies by means of Connexions Nos. 9, 10, 11, 12, 16, and 17.

RECEIVING COMPANY—WEST MIDDLESEX.

	Gallons per day.
Assistance could be rendered to this Company:—	
From New River Company, per Trunk Main No. 2 - - -	6,000,000
From Grand Junction Company - - -	3,000,000
From Battersea centre, per Campden Hill - - -	10,000,000
Total - - -	<u>19,000,000</u>

Further assistance could be given from the New River Company by the existing connexions at Tottenham Court Road and Euston Road.

Upon the supposition that the Battersea works can be made available, the terms upon which they might be utilised would have to be arranged between the eight confederated companies.

The provision of a 36" main from Hampton to Battersea would make Battersea a permanent centre. This could not be laid by next season, but the existing main would be sufficient until its completion. The cost of this main is estimated at 120,000*l.*; this, as a contingency, is added to the estimate of mains and connexions.

The mains laid in connexion with the Battersea centre would, in the event of the abandonment of the Battersea works, be available for distribution by retaining a small area at Battersea for a covered reservoir and pumps.

	£
Total estimated expense, mains and connexions, as above - - -	255,346
Contingent outlay for provision of 36" main from Hampton to Battersea - - -	120,000
Total - - -	<u>375,346</u>

(Mr. Pember.) There has been so much question and answer backwards and forwards with regard to this scheme, that I would venture to suggest to your Lordship to ask Mr. Collins whether there is anything about the scheme that he thinks has been misunderstood, and which he would like to explain.

16,702. (Chairman.) You heard that. Is there anything, Mr. Collins?—I should like to explain briefly what the scheme consists of.

16,703. Do so very briefly, please?—I will. The idea is to take the Battersea works as a centre. These works are capable of filtering 15 million gallons a day, with

pumping power for 25 million gallons a day. That being the case, it would be possible, by the running of certain mains, to make a distribution between all the companies which would be available, not from any one company to any other company, but from all the companies to any one company. That would necessitate the laying of certain mains. If you will refer to the plan accompanying the scheme you will see there is a main put down as No. 1; that is the line between Battersea and Campden Hill. That is what we call No. 1 connexion, and that would enable water in the first instance to be taken from Battersea to Campden Hill direct. That main would be the means of assisting the Grand Junction Company to a quantity equal to 10 million gallons per day from Battersea, and would also be available for passing water back from Campden Hill to Battersea in case the assistance is required for other companies. No. 2 connexion upon the plan consists of a main between the Campden Hill reservoir and the New River Head. That main is already partially laid. No. 2 connexion, which would enable the Grand Junction Company to pass water from their Campden Hill reservoir into the New River, would be for the assistance of the New River Company; and at the same time it could receive assistance from Battersea into Campden Hill: so it would be a circulation round from one company to another. Then, again, for the assistance of the New River Company, it is suggested that main No. 3 should be laid. That would enable the Southwark and Vauxhall to pass 10 million gallons a day through to the New River Company. No. 4 main would enable the Battersea centre to deliver water to Brixton, and No. 5 main is the main which is already partially made under the river, and would enable the Southwark and Vauxhall, without interference with their present supply, to give a suitable quantity to the East London Company. With these means of connexion as set forth in what we call No. 2 scheme, that is a system by which almost 20 million gallons a day can be provided for any one company in case that company is in trouble, in case of an emergency. We have set forth in this No. 2 report a list of the mains and connexions which we say might be made. We do not think, ourselves, that this is the only scheme that might be adopted, it is subject to alteration if necessity requires. After those connexions we give you the proposed quantity of water that could be delivered to any one company from the different sources. We take, first of all, the Chelsea as the receiving company, and we say that through the main No. 1 we could, by making a connexion, pass water to the Chelsea either from Battersea or from Campden Hill. Assistance could be rendered to this company, we say, through connexions with trunk main No. 1.

16,704. As you are upon the Chelsea Company, we have just heard from the Chelsea Engineer that they have an available balance of nearly 10 million gallons, so far as their pumping power is concerned, and five million gallons so far as their present filtering power is concerned, so you may say it has a minimum of five millions, which might go up to 10 if their filtering power is increased?—Yes.

16,705. The Chelsea Company are left out of this scheme?—They are left out as a contributing company.

16,706. Why should they be—it has the largest balance?—What I understood Mr. Hack to say, was that the maximum quantity that they could give at the time of their greatest supply would not be more than two million gallons a day. But we do not say we will not take that. We leave them out of this scheme, but it is quite feasible if they have the water, for them to supply it at any time, and we could take it into this scheme through the connexions we make. There is a connexion between No. 1, from Battersea to Campden Hill, into the Chelsea, 24-inch mains, where they cut. That would be just on the north side of the river where you see the word "Battersea" on the cartoon.

16,707. (Sir John Dorington.) Would the pressure from the Putney Heath reservoir, if a junction was made at the place where you say the mains would cut one another carry the water to Campden Hill?—Yes.

16,708. The Chelsea water?—Yes, because the height of their reservoir is 175 feet above Ordnance datum, and the height of the Campden Hill reservoir is 136 feet above Ordnance datum, so that a certain quantity of water could be passed there.

16,709. They would not require the Battersea pumps, but they could supply to Campden Hill by their own gravitation?—To a small extent.

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16,710. (*Chairman.*) This 15 million gallons a day that your scheme, No. 2, contemplates getting at the Battersea centre is quite independent of any help from Chelsea?—Yes, quite so.

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(*Mr. Pember.*) Of course, Chelsea could be made to help in this way—that, inasmuch, as they do not utilise all the water that they might take from the Thames for their own purpose, if all restrictions were done away with some of that water might be utilised for the Battersea scheme, and, therefore, increase its power and not hurt Chelsea.

16,711. (*Major-General Scott.*) Outside the Chelsea Company, how do you propose to get that 15 million gallons a day from the river to Battersea—how do you propose to take it out of the river—under what authority?—Of course, we hope that if this scheme is put into operation, there will be some relief from the difficulties as to inter-sale.

(*Chairman.*) Yes, take that for granted.

(*Mr. Pember.*) That is the basis of the whole thing.

16,712. (*Chairman.*) Where will you get 15 million surplus of pumping power if you leave out the Chelsea?—We have pumping power at the Southwark and Vauxhall. They have their works at Hampton, which have this pumping power for 15 millions.

(*Chairman.*) By pumping power, I mean power to take from the Thames.

(*Mr. Pember.*) Authority.

16,713. (*Chairman.*) Yes, authority to take from the Thames?—That, of course, we expect to get relief upon, so that one company, if it is not taking sufficient, might let another company take it to a certain extent.

16,714. Granted that, but where do you find surplus authority in the companies to take water from the Thames if you leave out the Chelsea?—The Southwark and Vauxhall have a surplus.

16,715. (*Major-General Scott.*) How much?—They have a surplus, I believe, of more than 10 millions now.

16,716. (*Mr. Pember.*) I think it is 11 millions?—I think it is 11 millions that they have at present.

16,717. (*Major-General Scott.*) Forty-five millions is the power of abstraction of the Southwark, is it not?—Yes, that is it.

(*Major-General Scott.*) By the Act of 1897 or 1898, I am not sure which.

(*Mr. Claude Baggallay.*) The 1897 Act is superseded by the 1898 Act.

(*Major-General Scott.*) The 1898 Act gives the authority to take—

(*Mr. Claude Baggallay.*) Twenty and a half million gallons a day.

(*Major-General Scott.*) Twenty and a half million gallons in excess of the 24½; that is 45 million gallons.

(*Mr. Claude Baggallay.*) Forty-five million gallons on an average of six months, and Mr. Restler tells me that their surplus water at the present time in round figures, is 10 millions, which they could supply to other companies, and that they have a pumping power in excess of their own requirements which would enable them to pump that.

(*Major-General Scott.*) That is the question I put to Mr. Hervey.

(*Mr. Claude Baggallay.*) I have that from Mr. Restler himself, the engineer of the company.

(*Mr. Pember.*) That figure is given at Question 15,114. "Can you estimate the surplus at all—how many million gallons a day?"—(A.) They have a surplus of 10 million gallons, and means of dealing with it." That is the Southwark and Vauxhall. In order to see what was meant by the surplus, and whose surplus the 10 million gallons was, the General said, "Which company is that?" and Mr. Balfour Browne said, and quite truly, "the Southwark and Vauxhall." Then he goes later on to say what the rest would be, and he works it up to 12 million, and adds those together, and then at Question 15,135 you total the whole thing up, and make it 22 million gallons.

(*Mr. Balfour Browne.*) Will your Lordship ask just one question of Mr. Collins. When he was here before, he said this was rather his own idea; would you ask him if it has now been submitted to the directors of the various companies, and has met with their approval.

(*Chairman.*) I did ask him that.

(*Witness.*) Yes, it has been submitted to them.

(*Chairman.*) And it is approved by all the companies.

(*Witness.*) It has been before all the chairmen and they have approved it exactly as it is before the Commission.

(*Mr. Balfour Browne.*) That is exactly it. It has been before all the chairmen, but the directors of the companies have not considered the scheme at all. Is not that so? The chairmen approved of it being put in.

(*Witness.*) That I could not say. I believe the chairmen represent the directors sufficiently as a rule.

(*Mr. Balfour Browne.*) The only chairman we have seen was Sir Henry Knight, and he disapproved of it, and suggested another scheme.

(*Mr. Pember.*) I am entitled to say that all the directors of all the companies approve.

(*Mr. Claude Baggallay.*) Sir Henry Knight did not disapprove of it.

(*Chairman.*) No.

(*Mr. Balfour Browne.*) He did.

(*Mr. Pember.*) Why did we discuss it? However, I am distinctly authorised to say that the directors of all the companies approve.

(*Chairman.*) Sir Henry Knight thought it would be sufficient to do a less thing, which he mentioned.

(*Mr. Balfour Browne.*) Quite so.

(*Mr. Claude Baggallay.*) But, he said, as an insurance it might be done.

(*Chairman.*) Yes.

16,718. (*Sir George Bruce to Witness.*) The cost of this work is down here, is it not, as 255,346l.?—That is the price.

16,719. That does not include anything for the purchase of the works at Battersea, I suppose?—No. We do not propose to purchase. In the report we say, "Upon the supposition that the Battersea works can be made available, the terms upon which they might be utilised would have to be arranged between the eight confederated companies."

(*Mr. Littler.*) I think, my Lord, in order to make it perfectly clear, I should say that my company—that is the Kent Company—is the one which is the least of all interested, because it is almost certain never to want this. We consider the scheme perfectly feasible, and we are perfectly prepared to fall in with it as a means of insurance, if it was to be needed; but we cannot speak to the details. It is absolutely inaccurate to say that any company dissents.

(*Mr. Balfour Browne.*) This scheme has nothing to do with the Kent Company. It does not touch it.

(*Mr. Littler.*) I beg your pardon, it does.

(*Mr. Balfour Browne.*) Not at all. It does not refer at all to the Kent Company, and therefore your approval is not very valuable.

(*Mr. Pember.*) At all events it has been approved by all the companies.

(*Mr. Littler.*) Absolutely approved by all the companies,

(*Witness.*) It does refer to the Kent Company. The Kent Company are put down as a receiving company only.

(*Mr. Pember.*) As to the Kent Company, it says, "Assistance could be rendered by means of connexions Nos. 13 and 14 from the Lambeth and No. 15 from the Southwark Company to the extent of, say, four million gallons. These in turn could be supplied from the Battersea centre."

(*Mr. Balfour Browne.*) It is not a giving company at any rate.

(*Mr. Littler.*) Surely when the Kent Company's counsel is authorised to make the statement I have made, it is positively improper for my friend to make those observations.

(*Mr. Balfour Browne.*) I entirely differ from you, that is all.

(*Mr. Littler.*) I can answer for my company a great deal better than the London County Council's advocates.

(*Major-General Scott.*) As the case stands at present the directors have expressed their entire willingness to carry out this scheme, but, on the other hand, a certain number of the engineers who have come here, I think, have expressed doubts as to whether their companies, that is, the company for which each engineer spoke, would think it necessary.

(*Witness.*) Yes, necessary for themselves; they consider that as a matter of insurance, it would be a very useful thing to have, but inasmuch as these companies have gone on a great many years, and such a connexion until this year has never been required, we feel that it is a lot of money to spend for that insurance.

16,720. (*Sir George Bruce.*) It is physically possible, and will answer the purpose if made and required?—Yes, and not only that, but it could be done very quickly, if necessity arose.

16,721. (*Sir John Dorington.*) How is it superior to what we have called Scheme No. 3, which is the existing mode of communication?—I do not think that was ever put forward as a definite scheme.

16,722. No?—Sir Henry Knight mentioned that there were certain connexions which he considered were sufficient for present purposes, and they have answered to a certain extent; but I may point out that these connexions that are made are not at all what we think sufficient for the purposes of inter-communication. For instance, we have laid at a large expense, and very quickly, during this autumn, a mile and a half of main along Oxford Street to connect the New River Head with the Grand Junction Company, but we do not look upon that as a permanent thing, because we want to do more to make it more effectual. We want to take that main from Poland Street through to Camden Hill, and then we shall have a very effectual connexion. Although it may answer for a short time it is not a connexion that we like. It interferes with our supply district, and one of the great advantages of this Battersea scheme is that all the water delivered from the centre is delivered into the company's service

The witness withdrew.

(*Chairman.*) I do not know whether the Kent Company want to be heard upon this Scheme No. 2.

(*Mr. Littler.*) No, my Lord, we have no desire to add anything. Your Lordship knows what is said in the Royal Commission with regard to us, and I do not think we need to add anything to the statements on behalf of the other companies.

(*Chairman.*) Is the Kent engineer here, because, if so, we will take him, after the adjournment, very shortly, in order to know what the company could contribute, and if the London County Council have any evidence to lay before us on this question of inter-communication we shall be extremely glad to hear it. We shall be very glad to have their views.

Mr. WILLIAM MORRIS called and examined.

16,733. (*Chairman.*) You are the chief engineer, are you not, to the Kent Company?—I am.

16,734. How long have you been chief engineer?—24 years.

16,735. In your view, is some scheme of connexion between the different companies desirable?—Yes, I think it is desirable as a general insurance against accidents or emergencies.

16,736. Have you considered Scheme No. 2?—Yes.

16,737. Has your company approved of it?—They approve of it generally, but it wants a little modification in order to give the Kent Company the benefit of the Battersea Scheme.

16,738. Does not the Kent Company get the benefit of the Battersea Scheme under it?—It is nothing very serious, but it does not. You will find we get 4 million gallons a day, whereas the Chelsea gets 10 millions, and the others get about 20 millions. If we got about the same as the Chelsea that would probably put us on a fair footing.

16,739. You say you ought to receive more than 4 million gallons a day if you want it?—We merely

reservoirs, and does not in any way interfere with the distribution in the districts through which it passes. It is delivered from reservoir to reservoir, and so is distributed amongst each company's customers.

16,723. What you have called Scheme No. 3 is rather awkward, is it not?—It is a little awkward.

16,724. Is it awkward to the extent of the difference of cost between the two?—It depends upon how much is wanted of it.

16,725. (*Chairman.*) It seems to me that Scheme No. 3 is only part of Scheme No. 2?—Yes, it is part of Scheme No. 2.

16,726. Would it be prudent to do that part first, and to go on by degrees with the rest?—I think it would. I think the most important part should naturally be done first.

16,727. You—the New River Company—do not anticipate yourselves ever being in need of this scheme, as I understand you?—No. We never have been in want of it and I hope we never shall be. Of course we do not know what might take place.

16,728. (*Major-General Scott.*) In the plan you have shown no connexion between Battersea and Nunhead?—No, because the connexions already exist.

16,729. Yes, but looking at the plan it looks like a dislocation or a break in the scheme, does it not?—Yes; but we did not like to put in too many existing mains, or we never should have made it plain at all. But there are connexions between Battersea and Nunhead.

16,730. And you can pump from Battersea to Nunhead?—Yes, to Nunhead.

16,731. That completes the circle?—That completes the circle, but what we have put in here are mains which are not in existence.

16,732. (*Chairman.*) I forget, but is Kent a contributing company under this Scheme No. 2?—No, we have not put them down as a contributing company.

Mr. E.
Collins.
15 Nov. '98

Recalled,
Q. 29,225.

[After a short adjournment.]

(*Mr. Pember.*) I thought it might be as well, my Lord, just to give you a copy of that amended report which contains Scheme 2 (*handing same to his Lordship*).

(*Chairman.*) I have already had it.

(*Mr. Pember.*) But there is a note that ought to be made upon it, I have referred to it once or twice, to the effect that the Chelsea Company could afford help to the scheme, if they were in a position to supply for the time some of their surplus take from the Thames in case of emergency.

(*Chairman.*) Where do you say that?

(*Mr. Pember.*) I mentioned it this morning. I have just had that added on as a note. It is not in the print. It is just so that you may bear that in mind.

(*Chairman.*) I do bear it in mind fully.

Mr. W.
Morris.

exchange. As it stands now it is an exchange of 4 million gallons a day. We are supposed, if necessary, to be called upon to give 4 million gallons a day and also we might receive 4 million gallons a day, but we do not get our supply supplemented by this Battersea Scheme. It involves nothing more than the laying of a pipe down in our direction.

16,740. (*Mr. Littler.*) I think it is really quite a matter of detail, my Lord, because it can be done. (*To the Witness.*) That is so, is it not?—Yes, it is nothing at all.

(*Chairman.*) I cannot see that you are called upon to contribute anything by this scheme.

(*Mr. Balfour Browns.*) No, they are treated as a receiving company, as Mr. Collins explained.

16,741. (*Chairman.*) You are not treated as a contributing company?—I thought we were. It was intended to be so under Scheme No. 1.

(*Chairman.*) But we are on Scheme No. 2.

(*Mr. Littler.*) We could give the two neighbouring companies that 4 million gallons a day by means of the connexion.

Mr. W.
Morris.

15 Nov. '98

(Chairman.) Yes, but I find this scheme extraordinarily difficult to understand. I cannot see anywhere which the contributing companies are.

(Witness.) If you look at connexion 15, you will see there that it says this connexion would assist either company.

16,742. (Major-General Scott.) Are you referring to No. 1 Scheme?—No, I believe not. I am referring to No. 2 Scheme, connexion 15.

(Chairman.) I cannot find anywhere in this print any computation of the amounts that are to be contributed, and by whom.

(Mr. Littler.) Would you just tell his Lordship that, Mr. Morris, as shortly as you can.

16,743. (Chairman.) I cannot find in this printed Scheme No. 2 who is to contribute the water. I see, the receiving companies; but I cannot see who is to supply the water?—It is all based generally upon Scheme No. 1. Scheme No. 1 has been modified. Under Scheme No. 1 it was intended to take water from the Chelsea Company, who were the only company who then had any considerable surplus.

16,744. We have been told twice this morning that the Chelsea Company are not taken into account in Scheme No. 2?—No, but under No. 2 Scheme it is intended to take water from Battersea, where it could be immediately used.

16,745. Where shall I find in this print that has been laid before us who is to contribute the water that is to be given to the receiving companies?—I think you will see that at the beginning, in a kind of preamble.

(Mr. Littler.) I think if your Lordship will look at the various heads you will see how it is contributed; for instance, "Receiving Company, Chelsea," there you find where they get it from.

(Chairman.) They get it from the Battersea centre, but who feeds the Battersea centre?

(Witness.) The Southwark and Vauxhall Company.

(Chairman.) But that is not said.

(Mr. Littler.) Yes.

(Chairman.) Where is it said?

(Witness.) In the first paragraph.

(Mr. Littler.) It is in the first paragraph your Lordship sees: "That company had at their disposal the whole of their plant at Battersea, capable of providing filtration for 15 million gallons daily."

(Chairman.) That means the Southwark and Vauxhall have to supply 15 million gallons.

(Mr. Littler.) That is the Battersea Scheme.

(Chairman.) But the Southwark and Vauxhall have told us to-day that they can only supply 5 or 6 million gallons, so what is the use of talking about their supplying 15 million gallons?

(Mr. Balfour Browne.) Not the Southwark and Vauxhall to-day, but last week.

(Chairman.) It was last week that Mr. Restler told us that the Southwark and Vauxhall could supply 5 or 6 million gallons now, and by laying down a new main they could send down 10 millions.

(Mr. Balfour Browne.) Yes.

(Mr. Restler.) That is rather confusing. It refers to line five, and 10 millions is the figure we believe we could send. Those 5 or 6 millions were not under line five.

(Chairman.) I do not know what is confusing. I can only say what you did say. That 10 millions is by the new main, you say?

(Mr. Restler.) Yes, my Lord.

(Chairman.) That 10 millions is not 15 millions.

(Witness.) There is available plant there for 15 millions; but at the present time there is only 16 million gallons of water that could be spared by the Southwark and Vauxhall Company.

16,746. (Chairman.) Then where is the other 5 millions to come from?—Afterwards, if another main is laid from the Thames, and the intake provided, the other 5 millions can be pumped, which is alluded to in a supplementary report.

16,747. What company is going to supply the other 5 millions?—No one company.

16,748. (Major-General Scott.) What is the plan?—Unless general powers of intersale are granted—

(Chairman.) But assume all that, and never mind about powers of intersale; who is going to find the water?

(Mr. Claude Baggallay.) I think if you look at the Scheme you will see about the Chelsea plant. The Chelsea Company are the receiving company, and the first 10 million gallons is to come from the Southwark and Vauxhall through the Hampton supply. Then if you read on it says: "Failing this, 10 million gallons could be delivered from Campden Hill by means of these connexions, the Grand Junction Company contributing 3 million gallons, the West Middlesex Company 3 millions, and the New River Company, 4 millions." So that you get another 10 millions there in addition to the first 10 millions, or, in lieu of it, you can take from any of those.

(Chairman.) There are half-a-dozen.

(Mr. Claude Baggallay.) You will find under the heading of each receiving company that it is provided that in addition to what comes from the Battersea works you can get water from one or other of the companies.

(Chairman.) I daresay it is my fault, but I do not understand it.

(Mr. Littler.) Your Lordship will find it under each head, I think.

16,749. (Chairman to Witness.) What with your existing plant, could the Kent Company now contribute to any inter-communication scheme?—We have calculated about 2 million gallons a day.

16,750. With your existing pumping power, filtering plant, and mains?—Yes.

16,751. You could deliver 2 million gallons a day where?—From our works at Deptford through the communication pipe that is mentioned here, No. 15, I think it is.

16,752. Never mind 15. Where is it; what communication pipe is it?—It is a communication pipe from Deptford to the Southwark and Vauxhall.

16,753. You mean through the Thames Subway, do you?—No, it was not intended to go through the Thames Subway.

16,754. Where then?—It was intended to connect with the Southwark and Vauxhall at Peckham. There are two small pipes going through the Blackwall Tunnel.

16,755. Let us follow up this pipe. You go through to the Southwark and Vauxhall at Peckham, and where next do you go on to—Battersea?—No, that is where I suggest that the scheme requires a little amendment. It should go on to Battersea, and we should have a larger main than was intended.

16,756. (Major-General Scott.) It does now go to Battersea by a smaller main, does it?—It simply provides for a connexion between the Kent Company's works at Deptford and the mains of the Southwark and Vauxhall Company at Peckham.

16,757. By means of these mains there is a connexion with Battersea?—Yes, that would be a connexion in that way, no doubt.

16,758. In that way there is a connexion, direct or indirect, with Battersea?—Yes.

16,759. (Chairman.) Is that so—you say "Yes" in such a doubtful way?—I do not know—I only know that this was a connexion between my company's works at Deptford and the Southwark and Vauxhall Company's main at Peckham, but what the arrangements of the Southwark and Vauxhall Company are I am not prepared to answer.

16,760. But you say you could spare how many gallons a day?—About 2 million gallons a day.

16,761. Of course, your powers of pumping from your well are unlimited by anything except the capacity of the wells?—Quite so.

16,762. Have you pumped your wells during this dry summer up to their utmost capacity?—Yes, very nearly, because we have had an accident which upset some of our works, and we were obliged to make good from our Deptford Station.

16,763. How much had you to spare this summer?—About 2 million gallons.

16,764. But you had not power to pump it?—Yes, we had ample power, but we were without communication.

16,765. But I understood your power had broken down?—What I meant was that we had pumped up to our maximum power. We tested our works to the extent of 25 million gallons a day, because at one of our pumping stations, at Wilmington, both our engines had broken down, and therefore we had to make it good from the other stations.

16,766. Will you give me, please, the number of gallons you pumped during June, July, August, and September of this year?—In June 17,003,000, in July 17,967,000, in August 18,686,000, in September 18,791,000, in October 16,523,000.

16,767. Those are not much higher quantities than you pumped in 1897, if at all?—Yes, my Lord, in September.

16,768. In September and October they are, but not in July or August?—No, in September it was 3 million gallons a day more than we did last year.

16,769. (*Major-General Scott.*) Does that quantity include the quantity you passed through the Blackwall Tunnel?—Yes, it does.

16,770. (*Chairman.*) Then, for your own purposes you did not pump much more than you did in 1897?—Yes, it was much more in those two months. In fact, the quantity we pumped in September is the highest quantity we have ever pumped in any month.

16,771. Give me the quantity for September again?—18,791,000 gallons.

16,772. How much of that went to the East London Company?—About 200,000 gallons a day.

(*Mr. Balfour Browne.*) The pipes cannot carry more.

16,773. (*Chairman.*) So that you pumped 18 million gallons last September, as against 15 million gallons, or nearly 16 million in September 1897?—Yes.

16,774. Now, supposing a drought of a like character to that of this year occurs again next year, shall you be able to supply 2 million gallons to foreign companies?—Yes, I think so. We had two of our stations not completed this summer, but we shall have them completed now, and we expect to get some more water in that way.

16,775. As I understand, you have some slight objection to Scheme No. 2, inasmuch as it does not provide for giving you more than 4 million gallons a day?—Yes.

16,776. Do you anticipate that you will want 4 million gallons a day in any circumstances that you can foresee?—I do not know. It is a question of insurance—merely a question of insurance.

16,777. What do you want to insure against?—To insure against any accident or unforeseen emergency.

16,778. What unforeseen emergency beyond accident is there?—I cannot foresee anything beyond accident.

16,779. (*Major-General Scott.*) You are pumping from one of the best reservoirs you could possibly have, are you not?—Yes, I believe so; an underground reservoir.

16,780. Any change taking place in that reservoir would be very gradual, would it not?—Yes, it would.

16,781. Therefore you have a very large insurance at present, have you not?—Yes, we hope so.

16,782. (*Sir George Bruce.*) But if your engines break down, the reservoir underground will not be of much use?—No.

16,783. (*Chairman.*) But a good many of your engines would have to break down at once to put you in need of any outside help?—Yes.

(*Mr. Littler.*) I think you have hardly made it clear to the Commission, that if you have got all the different pumping stations, you can supply to the other wells inter-communicably amongst yourselves.

(*Mr. Balfour Browne.*) So I understood—practically in duplicate all over.

(*Witness.*) Yes.

16,784. (*Major-General Scott.*) Where would these 2 million gallons come from? Can you specify the stations which would contribute to the 2 million

gallons?—All our supplies are centred at Deptford, and we should have to supply it from Deptford. They are all pumping day and night into Deptford, and at Deptford we just keep our engines going sufficiently to keep our reservoirs full.

16,785. How many wells pump into Deptford?—Seven.

16,786. Then on the road to Deptford these wells contribute to your district supply, I presume?—Yes, certainly they do.

16,787. So that it is the balance that remains after your district is satisfied that reaches Deptford?—Yes.

16,788. Where does the water go when it gets to Deptford—into a reservoir?—It comes to Deptford, and then the mains centre at Deptford, as it were, and then we can do what we like with the water.

16,789. You would simply drive the water into the Southwark and Vauxhall system?—Yes, we could take it, for instance, from the Eltham reservoir. That would be a convenient reservoir to supply it from.

16,790. Could you supply for several months for, say the five summer months, 2 million gallons a day?—Yes, taking it on the average.

16,791. (*Mr. De Bock Porter.*) Have you any indication in any one of your wells this year of stress owing to drought?—The drought has affected one of our wells.

16,792. Only one?—Only one.

16,793. (*Chairman.*) Which is that?—That is a well at Orpington. It stands at a very much higher elevation than any of the other wells. The ground level there is 210 feet above Ordnance.

16,794. If I understand this scheme at all you have not any works to do under this Scheme No. 2?—No, except to make these connexions as far as they go. There are two connexions with the Lambeth and one connexion with the Southwark and Vauxhall.

16,795. You have to do that?—Yes.

16,796. Which connexions are those—No. 13, is it?—

(*Mr. Littler.*) Your Lordship will find they are 13, 14, and 15.

16,797. (*Chairman.*) 7,125*l.* you will have to spend, and your company undertakes for that to bear your share of the interest of the whole debenture stock of 255,000*l.* in proportion to your water rental?—Yes, I believe my directors have agreed to join the other companies.

(*Mr. Littler.*) I do not know whether the Commission would care to have a table of the rainfall for the last 86 years, which has been very carefully taken?

(*Chairman.*) The rainfall where?

(*Mr. Littler.*) It was taken at our own stations.

(*Witness.*) It was taken at Greenwich.

(*Chairman.*) At Greenwich Observatory, I see. Will you give us the results?

(*Mr. Littler.*) I think I can give your Lordship the results. Of course it is a simple matter of arithmetic, and I thought it would be probably wanted by your Lordship. You will find that the lowest average of 10 years (1854 to 1863) is 22.7. That is as near as may be. Then the highest 10 years is 28.3, roughly. Then in the whole of the 86 years there have only been 11 years in which the rainfall has been below 20 inches. Of those, seven years have been above 19, one has been above 18, two have been between 17 and 18, one is exactly 17, none are below 17 until this last year, when it fell to 14.77.

(*Chairman.*) That had better go on the note.

(*The table was handed in.—See Appendix S, i.*)

See 19,518.

Cross-examined by Mr. BALFOUR BROWNE.

16,798. I understand that up to the present time your company has never been short of water?—No.

16,799. You told the Commission what you had pumped in particular months of this year. Can you tell them what is your maximum pumping capacity—what you could pump?—Of course in these questions it is rather a matter of estimate.

16,800. Yes?—I base my estimate on the practical working, and that would be, taking it as a maximum for one day, 25 million gallons.

Mr. W
Morris.

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16,801. You could pump 25 million gallons in one day—that is, your pumps would do it?—I think we should get water enough to keep those pumps going.

16,802. Yes. That is the next question I was going to ask you. You have answered two questions at once. Both the pumps could work, and you could find water enough to keep the pumps going?—Yes.

16,803. And the maximum that you ever have had to pump was in September of this year—18,791,000?—That is the average quantity we pumped in the month, but the maximum is about 21 million.

16,804. So that even on the maximum day you have had a surplus capacity and surplus water, if you chose

to pump it, of 4 million gallons?—Yes, that is only a proper margin for safety.

16,805. I am not going to say anything against that. It is a proper margin for safety, and it ensures your being able to keep up your supply?—Yes.

Re-examined by Mr. LITTLE.

16,806. With regard to the statistics in the Report of the Royal Commission presided over by Lord Balfour, you are prepared with evidence when we come to the general question to show that your capacity is underestimated, are you not?—Yes.

The Witness withdrew.

Mr. J.
Francis.

Mr. JOSEPH FRANCIS called and examined.

16,807. (Chairman.) You are one of the engineers of the New River Company, I believe?—I am engineer to the New River Company.

16,808. Are you in charge of the wells in the northern part of the system?—Yes.

16,809. Have you pumped this summer more water or less water from these wells than usual?—We have pumped more than usual.

16,810. Can you give me the figures?—I am afraid I have not the figures with me. I was not aware that I should be called, or I would have provided myself with them.

16,811. Cannot you give them approximately, or give us an idea by how much you have exceeded your average pumping this year?—I think the average for this year will be about two millions a day throughout the year above the average of the highest year in the past.

16,812. Two millions above your highest former average?—I am speaking from memory, and I think that is about right; but I should have liked very much to have had the figures with me.

16,813. Are your wells situated alongside the River Lea?—They are not very far from the River Lea.

16,814. What distance?—They are all within half a mile.

16,815. And some, how near?—The nearest is within several hundred yards; less than a quarter of a mile.

16,816. Have you nothing nearer than that?—Nothing very close.

16,817. How many of them have you got alongside the Lea in this way ranging from half a mile to a quarter of a mile?—We have five or six.

16,818. (Mr. Littler.) You have some in North Middlesex further from the Lea than that?—We have some a good distance from the Lea, but his Lordship is speaking now of those within a range of half a mile, I understand.

16,819. (Chairman.) Yes?—I should think seven are not very far from the River Lea.

16,820. From those you say you have been pumping on an average two million gallons a day, I think you said, above your highest average ever known before?—Yes, that is the average throughout the year.

16,821. Is the Lea in that part of its course running on the same chalk stratum in which your wells are sunk?—Yes, but the bed of the river is lined with alluvium. It does not run upon the bare chalk.

16,822. Lined with alluvium, that is, such deposit as the floods may bring down?—It is not a recent deposit. It has been brought down, at least a great deal of it, long ago, and it has remained there for many years, and it has made a watertight channel for the river.

16,823. We have heard of the Lea running in places over the chalk, and of supplies of water oozing through the chalk into the river?—There are places where it occurs, but it does not occur generally.

16,824. Does it occur in the region along which your six wells are, within half a mile to a quarter of a mile of the Lea?—To a very small extent, indeed.

16,825. To some extent?—To a small extent.

16,826. Your wells, of course, are fed by whatever water is contained in that chalk formation?—Yes.

16,827. Which at places, and to some small extent, you say, supplies water to the Lea?—To a very small extent.

16,828. Has the Lea been lower this year than you have ever known it before?—Yes, it has.

16,829. In the part we are speaking of, in the part near your wells is that?—The sources of the Lea are very much higher up, and the water did not come in to the river there, so that, of course, it is lower opposite our wells.

16,830. You say there has been a deficiency up in the higher sources?—That is so, and there is no connexion whatever between the pumping from our wells and the deficiency.

16,831. I see, you anticipate me. I have been leading you up to that point, and I was going to put that question to you next. You say there is no connexion whatever?—Yes, I say there is no connexion whatever.

16,832. Why do you say that?—Because the effect of pumping from our wells is purely local.

16,833. What do you mean by local?—It is within a very limited radius—it does not form a true circle, but at a very limited distance from any pumping centre the effect disappears.

16,834. What distance?—It is variable, but I think if you take a quarter of a mile—speaking generally, because there may be exceptions—that will give a very fair idea of it.

16,835. But do you mean to say that each well is filled only from the circle of chalk within a quarter of a mile, and that it is not fed by water trickling or oozing or permeating through the chalk further off?—It is fed by a stream of water passing through the chalk from high ground towards lower ground and going underneath the London tertiary.

16,836. But from high ground situated much more than a quarter of a mile off?—Yes.

16,837. Then when you tell me the effect of your pumping is confined to a radius of something like a quarter of a mile, you must be stating the matter a little too widely, because your well is fed from sources much more than a quarter of a mile off, and the water comes through that bed of chalk?—No, I can assure you I am not stating it in the least too widely. The water we pump out of the chalk affects the underground stream on the lower side of our well in the direction in which the water is going, but not beyond this small range I speak of, in the direction from which the water is coming. If you pump the water out at London Bridge, it affects the quantity lower down the stream, but not the quantity higher up; at least, not the flow of the water a considerable distance up.

16,838. Then will you put in your own way the reasons for which you say that your pumping does not affect the Lea at all?—There is no evidence to that effect. There is merely the coincidence. There is a very dry year in which we pump more than usual; there is a very dry year in which the upper springs are depleted. The water falls upon the high chalk. It sinks down into the ground, and as it passes onwards and onwards in the direction of our wells beyond, and on towards the pumps, it naturally falls below the level of the outflow of the springs that form the sources of the Lea and there is no evidence whatever to show that the pumping has any effect upon the yield of the Lea. There is the coincidence that they occur at the same time. That must be so.

16,839. (*Mr. De Bock Porter.*) Has not one of your wells given out this year—one of the wells from which you have had a large supply in the past?—No, nothing has given out. We have had one stop, but that was because of an accident—a breakage—by the material breaking in at the side of the well.

16,840. Not from any deficiency in the supply of water at the well?—Oh, no.

16,841. (*Chairman.*) We understood the Amwell well had failed?—Oh, dear no. All our springs in the open chalk have yielded as well this year as any other year, with the qualification that, of course in a dry season, or after a series of dry seasons, the pumping level is slightly lower than in a wet year, or after a series of wet years.

16,842. Slightly is so very vague. How much is it lowered?—Two, three, or four, or five, or six feet, or something like that. All our pumps are always plenty low enough to draw water from the lower level, and therefore it has no effect whatever upon our resources.

16,843. (*Mr. De Bock Porter.*) You spoke of having pumped 2 million gallons more than in previous years. Is that from the same number of wells, or a larger number of wells than was in existence before?—The same number of wells as has been in use for several years.

16,844. (*Chairman.*) You say that neither the Amwell well nor any other spring or well has failed?—No, not at all.

16,845. (*Major-General Scott.*) There was a report that one of the springs had failed—Chadwell?—Chadwell spring has, but we were speaking of wells.

16,846. (*Chairman.*) I said springs or wells plainly?—I beg your pardon, my Lord. Our Chadwell spring has failed this year, but that does not really affect our resources as we count upon them, because we know that in dry years that has before almost entirely, if not quite, ceased to flow, so that in reckoning up what we can count upon in the future, we always put that spring down at nothing, but this year it has failed for some time.

16,847. (*Mr. De Bock Porter.*) In an average year, what would that yield?—The average throughout the year?

16,848. No; what would be the average yield from that spring?—You are speaking of the average throughout the year, I imagine?

16,849. Yes?—It would be something like 3 million gallons; in wet years it would be 4 millions.

16,850. (*Chairman.*) Three million gallons per year, or 3 million gallons per day?—Three million gallons per day.

16,851. (*Sir John Dorington.*) Did that run actually dry?—The fact is, that the water is delivered into a basin. It comes from a long distance; it is delivered into a round basin. A leakage has occurred in that basin, which has allowed the water to flow out into the surrounding chalk. That is what has occurred.

16,852. (*Chairman.*) But you told us just now that that spring had failed, and do you mean to say now that the failure was only because of a crack in the basin. Did the spring fail or not?—It has failed us. It has failed to overflow into our channels; and it has ceased to rise to that level. There is still water coming, certainly.

16,853. But it comes in a way that is of no use?—Of no use to us at the present moment.

16,854. That has nothing to do with the crack in this basin?—Yes, that has allowed it to escape, otherwise it would be of use to us.

16,855. But you say it does not rise up to the channel?—Yes.

16,856. The channel is not the basin?—No.

16,857. The channel runs into the basin, as I understand?—No.

16,858. What then?—The basin runs into the channel. The water comes by an underground crevice through the chalk, for a long distance, into the basin. From that basin it flows along our river channel.

16,859. Has it come into the basin this year?—Not to a sufficiently high level to allow it to flow off down our stream.

16,860. What has the crack in the basin to do with it, then?—That prevents it rising to the usual level. It leaks off into the surrounding strata.

16,861. (*Sir John Dorington.*) Is the basin an artificial one or a natural one?—I do not know. It is very ancient. I should think it is more or less artificial now, at any rate, in its present shape and condition.

16,862. (*Chairman.*) How long has that crack been there?—It has only developed during this summer.

16,863. Then, of course, the water has not risen to the same height in the basin?—No, it has not.

16,864. But you say that is not due to any failure in the spring, but that it is owing to the crack?—That is so, I imagine, but, at the same time, the spring in droughty weather always yields much less than in wet weather, and it has on former occasions so slowed down that it would not allow the water to rise to such a height as to be of any advantage to us.

16,865. Even when there was no crack?—Even when there was no crack.

16,866. Is it a failure of the spring, or the crack, that has caused this thing to give way, to fall out this summer?—I think it is both.

16,867. (*Mr. De Bock Porter.*) Has the total supply from the springs and the wells been more or less this last year. You spoke of two million gallons more from the wells, but, taking the wells and springs together, what is the total supply?—I am only speaking now of what we have actually pumped. We only pump as much as we need. We have required more this year and we have pumped more this year.

16,868. But has the aggregate supply from the springs and wells been larger this year than in any former year?—Yes.

(*Sir John Dorington.*) They have pumped more from their springs.

16,869. (*Chairman.*) Do you consider that even if the drought of this summer is repeated you will be able to go on furnishing 6 million gallons a day to other companies?—I do not see why we should not, subject to our own requirements.

16,870. Of course, subject to your own requirements, but will your requirements permit you to spare so much as that?—I think it is extremely likely, but we must provide for our own consumers first, of course.

16,871. (*Major-General Scott.*) At what daily rate is your supply increasing year by year?—It is about a million gallons a day I think.

16,872. As much as that?—Very nearly.

16,873. I think the average over a number of years is not more than half a million, is it—take the last 12 or 13 years?—I think you will find it is more than that.

16,874. (*Chairman.*) A million gallons a day extra?—Yes, each year, taking it on an average. Of course, it varies. If you made a diagram, it would go up and down very much. On the average we want about a million gallons a day more each year.

16,875. (*Sir John Dorington.*) In 10 years the demand on you will be increased by 10 million gallons a day?—Yes, I think that is very full as an estimate, but still it is not very far from it.

16,876. (*Mr. Littler.*) That is owing to the increase of population in the outer zone, is it not?—Yes, and not only that, but to the increased use of water by the existing consumers.

16,877. (*Major-General Scott.*) In 1881 your daily supply was 28,916,509 gallons, according to the return given?—I daresay.

16,878. In 1897 the supply was 35,974,488; would you kindly subtract one from the other, and divide them by 16 for 16 years?—I do not know whether those are suitable years to take—1881 and 1897. It does not do to pick out at random any number of years.

16,879. Those are over a long term, 16 years?—Yes, but I do not know that 1881 is a suitable year to take to get a fair average. It may be an extremely high year, or an extremely low year.

(*Major-General Scott.*) That is so, but, still, a variation over 16 years is instructive.

16,880. (*Mr. De Bock Porter.*) For 1897 the New River Company delivered 35,974,000 gallons, and in 1895, 38,051,000?—Yes.

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16,881. So that it has gone down?—Yes, and that shows it is not wise to take 1897.

(Major-General Scott.) At any rate, the 16 years period gives about half a million a year increase.

16,882. (Chairman.) In 1895 there were some special reasons, where there not?—Yes, it was a very dry year, and there was a very great demand for water.

16,883. (Major-General Scott.) 1831 and 1897 were the two years I took?—But you see, if you take 1895 and 1881, you get a different result altogether.

(Lord Robert Cecil.) I should ask leave to be allowed to ask just one or two questions of Mr. Francis?

(Chairman.) Then, pray, do it quickly.

Cross-examined by Lord ROBERT CECIL.

16,884. I just want to know about this Chadwell Spring. It has, in fact, fallen lower this year than it has ever fallen before, has it not?—Yes.

16,885. Much lower?—Yes.

16,886. In 1892, before the Royal Commission on Water Supply, you said that the lowest you would expect from this Chadwell Spring was 450,000 gallons a day?—What I said at that time, in 1892 was, that when it fell below that it was very difficult, with the means we had, to measure what was coming.

16,887. Forgive me. Just let me read to you the answer you made. It is at Question No. 5,382. "But does not that raise a presumption in your mind, that as a permanent source of supply, Chadwell Spring is not much more, if any more, reliable than the flow of an ordinary stream?" (A.) Yes, and in giving in the return of what amount of water we can now rely upon, I have put Chadwell Spring at a very low figure indeed. (Q.) What was the figure? (A.) It is 450,000 gallons a day; that is the lowest it has been for any length of time?—From our experience of the very dry years we have had since then, I have put it down for several years now at nothing at all.

16,888. I am not impugning your veracity, only I am calling your attention to the fact that a very different state of things exists now from that which existed in 1892; is that so or not?—I have every reason to believe that in past years, when there have been very dry years, as in 1864, the probability is that the yield of the spring has gone down to nothing.

16,889. Let me remind you that at Question 5,375 you quoted Mr. Muir as saying before the Royal Commission in 1867; who was Mr. Muir?—He was formerly engineer to the New River Company.

16,890. He gave engineering evidence before the Water Commission in 1867?—Yes.

16,891. And did not he say this: "We reckon that the Chadwell Spring has an average flow of 400 cubic feet per minute or 3,600,000 gallons a day. That is the daily average. Sometimes the flow is very much more"?—Yes, and I put it at 3½ millions instead of 4½ millions, and I should say that is probably the average, and when we get a series of wet years, we shall get it brought up by high figures to that average again.

16,892. At any rate, you admit it has sunk lower this year than ever before?—Yes, but that is for a special reason.

16,893. What is the special reason?—That the water has found its way elsewhere. A channel of communication has been established between the underground fissure that supplied the spring and the general body of the chalk, that did not exist before.

16,894. Do you suggest that up till now this chalk spring has had no communication with the surrounding chalk?—Practically none.

16,895. Then where did the water come from?—The Chadwell Spring water?

16,896. Yes?—Nobody knows.

16,897. Does not it occur to you that it may have come from the body of the chalk?—Of course it comes from the body of the chalk somewhere, but where, we do not know. It most probably comes many miles.

16,898. Can you give any reason for believing in the existence of this new fissure?—Yes, I think that is perfectly clear, because the water has never sunk from the basin before.

16,899. I see—that is the only reason for your believing in the existence of this new fissure?—Yes, I think that absolutely proves it.

16,900. Yes, but that is not the question. Is that the only reason that you believe in it?—I think so.

16,901. Now, you have told us that you have pumped 2 million gallons more from your wells this year than you did last?—Yes.

16,902. Roughly speaking, and without dealing with each particular year, you have been, for some years, increasing your pumping from wells, have you not?—Yes, we have.

16,903. So that now you are pumping a great deal more than you were pumping from the wells in the year 1892?—We are pumping more, but I do not know that it is a very great deal more.

16,904. But still more, and more than you were pumping before 1892?—Yes.

16,905. Just one question about this underground stream theory. Your theory is that there is an underground stream in the chalk?—Yes.

16,906. Flowing quite freely?—Yes.

16,907. If that were so, the water would not rise to the surface, would it, in the well, for instance, at Waltham Abbey?—I really do not know the circumstances of the well at Waltham Abbey.

16,908. Then take any well in the chalk. I do not think it is in the least important that you should know the circumstances or not. The only reason for which the water would be driven up from the chalk to the surface would be because it could not get away underground; there is a pressure from above, and it cannot get away underground, and so it comes up when you make a hole for it. Is not that so?—It depends entirely upon where the surface is. If the surface happens to be a little below the saturation level, the water rises above the surface.

(Chairman.) Is not this a little wide of our present subject?

(Lord Robert Cecil.) Perhaps, but I only wish to give to your Lordship the fact that there is an answer to this theory of the underground stream, which I have to develop later.

(Chairman.) The only question is as to the inter-communication scheme—whether they are going to contribute to it.

16,909. (Lord Robert Cecil.) Then I will only ask this, how much can you pump from the Chadwell Spring at this time of the year?—We do not, as a rule, pump from the spring at all.

16,910. Did you not reckon to pump in that spring itself this year?—Yes, we did, for cleaning and examination purposes.

16,911. But not more than that?—No, that is all.

16,912. Do you take gangings of the yield of the Chadwell Spring?—Yes.

16,913. Have you any objection to supply us with the gangings of those springs?—I think we have supplied them.

16,914. Do you gauge the height of the water in the Chadwell Spring?—Yes.

16,915. Do you supply that to us, or have you any objection if you do not?—I do not know that the levels of the wells we have been pumping are of any value or use to anybody.

16,916. But do you object to supply them to us—

(Chairman.) Again I must humbly ask, what has this got to do with the inter-communication point?

(Lord Robert Cecil.) Very well, my Lord.

(Mr. Claude Baggallay.) Might I just ask a question as to the New River Company?

(Chairman.) If it is to the point, yes, but we are on inter-communication and nothing else.

(Mr. Claude Baggallay.) I know, but it is also on this point which has been mentioned just now.

Re-examined by Mr. CLAUDE BAGGALLAY.

16,917. I want to know how many wells were you drawing from when you said that your average pumping or take was 2 million gallons above the average of the previous year; was that from all your wells?—13 wells—all except one.

16,918. It is only seven of these, I understand, which are near to the river?—Yes.

16,919. But the surplus amount comes from the whole lot of the wells. Now, with regard to this Chadwell Spring, does that fail every year?—In very droughty seasons, if it does not fail, it very nearly does.

16,920. It always falls low?—Always very low, and in very dry times it does go down to nothing.

16,921. Is the Chadwell spring readily affected by rainfall—is it quickly affected by rainfall?—Yes, rather.

16,922. Would the falling off of the rainfall, as shown on that table taken at Greenwich Observatory, from over 25 inches to 14½ inches sensibly affect the flow of the spring?

The witness withdrew.

Sir ALEXANDER BINNIE recalled and further examined.

16,926. (*Chairman.*) We are considering, as you know, this point only of inter-communication with the different systems; have you considered Scheme No. 2?—I have.

16,927. What do you say to it?—That I think, under existing circumstances, it is unnecessary.

16,928. In your judgment, is any scheme of inter-communication necessary?—Nothing, to cope with the difficulties that we foresee next year, further than what has already been done by the companies in making the connexion with the New River, Grand Junction, and West Middlesex, at Poland Street, Oxford Street, and the communication through the subway at Tower Bridge, and the small communication through the Blackwall Tunnel. I do not think that further assistance is necessary after the evidence we have had from Mr. Bryan yesterday.

16,929. Then you are in favour of Scheme No. 3—Sir Henry Knight's—practically?—Practically, it comes to that.

16,930. You think it is not worth while at all, then, to establish inter-communication so as to guard against accidents or casual breakdowns on the part of the other companies?—Hardly so. It very much depends on what is going to happen in the future. I contemplate the spending of half a million of money in making these connexions in this particular way as money very much wasted, if the companies are to be purchased.

16,931. Why so? Would not the purchaser at once couple up all these concerns so as to make them practically one concern?—In a different way.

16,932. Do you mean that there is a better scheme of inter-communication?—We will be perfectly plain.

16,933. Yes?—Supposing the County Council were to purchase the whole series of communications to-morrow, and they were in one hand (and we have seen, from what we have listened to lately, the advantage of doing it), the water would come in in the future, not from the Thames Valley, but from the northward.

16,934. There would be 185 million gallons coming in from the Thames?—Yes, there would.

16,935. (*Sir George Bruce.*) By the northward, do you mean from Wales?—I do.

16,936. That will be some years yet?—Yes.

16,937. (*Sir John Dorington.*) From the Elstree Reservoir?—From the Elstree Reservoir, and I should not like to see it complicated by this central communication. I quite agree that Scheme No. 1 is a very good scheme that was placed before your Lordship last Monday, and I think, putting on one side for a moment the particular drought of this year, that something of the kind will have to be done in the future.

16,938. (*Chairman.*) At present you have got a vast number of powers of pumping, filtering, and drawing from the Thames, and drawing from wells, and so on, in the hands of eight companies?—We have.

16,939. Whether those remain in the hands of the eight companies, or whether they are united in one hand, do you not think it would be desirable to make all those resources available for any part of London?—Not in this particular way. I do not think that it would be conducive to the general result to bring all the communications to one point at Battersea, which,

(*Lord Robert Cecil.*) That is not the Hertfordshire table.

16,923. (*Mr. Claude Baggallay.*) I did not say it was. It is the Greenwich Observatory table?—Yes.

16,924. I mean it would quickly affect it; it is not like some spring which is not affected for a year at all, or much longer?—Oh dear, no.

16,925. Do you find that when you are pumping from your wells, amongst your own wells, the pumping from one well seriously affects any other well?—No, certainly not. By the pumping from wells in very close proximity to one another, in most cases, there is no effect whatever produced, and where there is any effect it is very small indeed.

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as you have heard from almost every witness who has occupied the chair, may possibly never be used at all.

16,940. It may never be used at all, so long as the companies are separate—in the opinion of the witnesses?—Yes.

16,941. But supposing the companies are united by a purchaser, I should think that it would be used constantly?—With deference, I think their Scheme No. 1 would be a more workable scheme than their Scheme No. 2, if all the companies were amalgamated.

16,942. You say that, in the event of purchase, Scheme No. 1 is the best?—Scheme No. 1 is the best in the case of a thorough amalgamation of all the companies for getting over this particular difficulty. I think that the difficulty of next year, and probably the year after, is fully met by what has already been done.

16,943. (*Major-General Scott.*) And after that—after two years?—After the next two or three years?

16,944. Yes?—We must suspend our judgment till we see what the companies are going to do in Parliament. We hear that Mr. Bryan, on behalf of the East London, is going to Parliament, and we hear that the West Middlesex is going to Parliament. I should really be sorry to go ahead two years at the present moment. I am looking from the limited point your Lordship has put, to see how we are to deal with the case of the East London next year or the year after.

16,945. Do you think in two years the East London will be independent of all these connexions?—I think not.

16,946. Then they must continue to operate—

(*Chairman.*) Supposing all the companies were bought next year by A. B., the East London will want water?

(*Witness.*) True.

16,947. And will it want some assistance in order to be supplied with water by A. B.?—It will most probably, but the amount of that assistance is gauged by the figures Mr. Bryan gave us this morning. They were short 17½ millions in September last, and they were short 18,600,000 in October last. We know that from the Thames the Thames companies, speaking collectively, have power to draw 150 million gallons a day—I think it is 150½ million gallons. They drew as maximum lately 136 millions. There is, therefore, 14 million gallons available from the Thames collectively. We know of six million gallons that the New River can afford; that is 20 million gallons from those two sources to meet the possible bad case of next year, the East London Company being deficient by 18,600,000 gallons. I am putting it in that brief way without going into details.

16,948. (*Mr. De Bock Porter.*) What has already been done would allow that to be distributed?—With the addition of that main spoken of by Sir Henry Knight—the Nunhead main—that would raise the six millions to 10 millions through the Tower Subway.

16,949. In fact, Scheme No. 3 is quite adequate with that addition?—Quite adequate with that addition.

16,950. (*Chairman.*) Adequate for East London?—Yes.

16,951. But not adequate to meet emergencies arising elsewhere in the general water system of London?—No, but all the engineers have told us very frankly, and

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I think truthfully, that they do not anticipate difficulties in their own districts. They only look upon this main as a matter of insurance for the future—for some possible and unforeseen contingency.

16,952. (*Sir George Bruce.*) Then you do not think it desirable to guard against unforeseen contingencies, do you?—Certainly I do, and I am dealing with this first contingency of possible failure in East London, and I point to the fact that if we were going into the question of communications and pipes generally, the whole system ought to be worked in a different way—not from the centre outwards, but from outwards inwards, and that is the form it would take in my mind. In fact, for the County Council I prepared some time ago a report upon communications, which differs so little from Scheme No. 1, which I had not seen, Scheme No. 1 being rather better in some respects (I had a few more connexions than they had), and really I feel that I am almost at one on the subject.

16,953. (*Mr. Littler.*) There, again, the companies want to do more than the County Council wish them to do?—Under Scheme No. 1.

16,954. (*Chairman.*) Then you, in fact, differ from every one of these eight water engineers whom we have seen to-day, and who all prefer Scheme No. 2 to Scheme No. 1?—I do in that sense, because I am looking at it, not as eight companies at all, but I am looking at it as amalgamated into one hand.

16,955. However, if they were amalgamated into one hand, as I say, if the County Council were the purchaser of these eight companies next year, you would recommend Scheme No. 1?—I should, looking to the future, recommend Scheme No. 1, but for the immediate necessities of the case, I think that they would be amply fulfilled by laying that No. 5 main on the plan you have before you, which would allow the Nunhead Reservoir to increase the pressure through the Tower subway.

16,956. That is, you would meet only the possible, or, indeed, the probable, failure of the East London next year, and you would meet nothing else?—For the immediate future?

16,957. Yes?—For a few years hence I should adopt a scheme similar to No. 1.

16,958. (*Major-General Scott.*) Should you be inclined to leave out the extension of the 24-inch main from Poland Street to Campden Hill Reservoir, which would enable the Grand Junction and West Middlesex Companies to give a little more water?—They are giving the water at the present time, as you are aware, but from what we have heard from those companies to-day, I do not think that they have very much to spare in that direction. Certainly the West Middlesex apparently has not much to spare.

(*Chairman.*) The West Middlesex amount, I thought, was three million gallons a day.

(*Mr. Balfour Browne.*) A million and a half the West Middlesex said, and even then they are going for a Bill this session, they told us.

16,959. (*Major-General Scott.*) They have something to spare at certain periods?—They have.

16,960. If they have to deliver during five months, as they might have to do, then some of those months they could spare more than 1½ millions?—There is no doubt about that; and, as pointed out by Sir Henry Knight, there is a very important question about all those connexions to be considered, that is, that in the case of a company like the East London, which expects to be deficient in the dry summer months, a good deal could be done by other companies, when they have water to spare, passing it into the East London district, and so saving the expenditure of storage of the East London Company itself—in anticipation of drought occurring, I mean.

16,961. (*Chairman.*) I take it you come here, not merely to express your own opinion, but to express the views of the London County Council?—I can hardly say that, because neither the London County Council nor its committee could have heard the evidence of the last two or three days. I am taking somewhat on myself, but I think I am not misrepresenting the general view.

16,962. So that I may put it that the London County Council is opposed to anything but what I may call Scheme No. 3 for the immediate future, and a possible adoption of Scheme No. 1 when the companies are

bought up?—Yes; or the companies themselves would have to do it, I believe, at some time. What I think I might say is that the County Council would feel very much aggrieved if an expenditure of half a million was put upon the undertakings of the companies at this period, after listening to the evidence that we have heard.

16,963. Yes, they would have to take that amount of debenture debts?—Yes.

16,964. Any purchaser would?—Yes.

19,965. But, on the other hand, one cannot help seeing that the adoption of Scheme No. 2, although it will increase the debenture debt, will diminish the selling value of the companies?—That is a matter I have not gone into. I have merely looked at it from the engineering point of view.

(*Mr. Balfour Browne.*) I am far from certain of that, my Lord. If it is an assurance or an insurance, I think it might increase the number of years' purchase. I am not prepared to say it would decrease it.

(*Chairman.*) A dead outlay of interest, with no possible corresponding or recouping advantage?

(*Mr. Balfour Browne.*) Yes, my Lord; but, for instance, if the East London were bought now, it would be bought as a defaulting company, it not being able to supply the water. If this scheme were carried out, it would be bought as a company that had the water and could supply, and I think it would get a much larger number of years' purchase then.

(*Mr. Littler.*) Then you avail yourselves of a drought to depreciate the property.

16,966. (*Chairman.*) May I take it that your view is, so to speak, the view of the engineer of a possible purchaser, and not the view of an engineer who is thinking only of the water consumer?—Both.

16,967. Where is the East London consumer's interest taken into account in your view?—The East London consumer's interest is protected, in my opinion, by what has been done, and the small addition to it which Sir Henry Knight pointed out could be done, I think, almost within the Parliamentary powers of the company.

16,968. Then you think that what has been done by the companies in the last autumn, in the month that is just past, was really practically sufficient to meet the crisis?—And Mr. Bryan apparently agrees with me in that.

16,969. I mean, that is your view?—Yes, that is my view.

(*Sir George Bruce.*) No fear for next year.

16,970. (*Chairman.*) You think that really what has been done, not only was all that is wanted this year, but is probably all that will be wanted next year?—So Mr. Bryan tells us, and I think so.

16,971. But I want to know what your view is?—I think so. I think if you can insure getting 20 million gallons into the East London district next year, it is safe for two years to come.

(*Major-General Scott.*) But Scheme No. 3 does not give 20 million gallons, does it?

(*Chairman.*) Nothing like.

(*Witness.*) I think so. Sir Henry Knight made out that it gives 24 millions.

16,972. (*Major-General Scott.*) It gives 16 millions, does it not?—These are the figures that I took from Sir Henry Knight—the New River, six millions; West Middlesex, three millions; Southwark and Vauxhall, 10 millions; then he goes on with Kent, two millions, which we have heard something of to-day, and Chelsea, three millions. I would knock out the two and three, and add the two which Mr. Bryan told us yesterday he could bring from the Hanworth Springs.

16,973. But that is included in the 24 millions in his table from springs and wells and the Thames?—It is included in that, but it is in addition to what we have at the present time.

16,974. In the six million he includes the West Middlesex and Grand Junction?—You are perfectly right. Mr. Bryan does; but we have it on the notes that the New River Company are supplying, and can supply, six million gallons a day.

(*Chairman.*) Sir Henry Knight certainly did bring out a total of 24 million gallons.

(*Major-General Scott.*) Through the connexion with the Chelsea, I think, my Lord, which Mr. Restler afterwards thought was not certainly available—there was a doubt about it.

16,975. (*Chairman.*) Yes, he reckoned upon two or three millions from the Chelsea. (*To the Witness.*) I may, in fact, put it in this way, I think, from your evidence: You think that any large scheme of coupling up will be prejudicial to a possible purchaser?—I think so. I am not speaking—in the sense of a purchaser with regard to the finance—I am thinking of the way in which my own hands would be tied if I bought a concern with pipes like those that we have been told are not likely to be used, and which certainly I do not think ever will be used.

16,976. (*Sir George Bruce.*) That is, will not be used because the necessity will not arise?—Certainly.

16,977. But the same would apply to any other pipes which might be added if the necessity never arose?—No, but I think the connexions might be formed somewhat on the lines of Scheme No. 1, where the connexions would be less expensive, and more likely to be used.

16,978. (*Major-General Scott.*) But the essence of all this scheme of connexions is, that they are only to be used on emergency. The companies are not to depend upon them for their ordinary supplies. They are to arrange their affairs so that they will not use those special means of supply?—That I perfectly understand.

16,979. A company that falls back upon these means, and draws upon other companies, is in default?—So I understand.

16,980. But I understood you to say that these arrangements of No. 1 Scheme would be more likely to come into use?—Yes, because I am contemplating, in laying out No. 1 Scheme from my own point of view, the whole thing being worked by a purchaser as one concern, where you would get rid of these various matters of difference which now exist between the different companies.

16,981. (*Chairman.*) But we have heard of no matter in difference which makes Scheme No. 2 preferable to Scheme No. 1. We have heard of no matter in difference; on the contrary, we have been told that Scheme No. 2 is a scheme by which the filtered water is delivered into the service reservoirs, and therefore, in the most convenient way, it will be distributed to any part of the town?—You have.

16,982. Do you dissent from that? Is not that the most convenient way of helping distribution in all parts of London, that you should add to the reservoirs which supply the distribution pipes?—It does not commend itself to my judgment as the way to do it.

16,983. That is an answer?—I do not work in my plan from the centre outwards; but I rather work from the outer ring inwards. For instance, on that map is omitted a very important main that must, in the future, if London is going to be properly supplied, play a very important part. From near Sunbury, running round the outer edge to the East London district, is a very large pipe of the New River Company to bring forward their Staines quota of the water, which we have heard is to be a very much larger size than is actually necessary to bring forward that quota of water. That pipe crosses the East London at Sunbury. It comes close to one of the Grand Junction mains at Hounslow; it crosses the West Middlesex mains in the neighbourhood of Kilburn; and so on, and there are many other connexions that will be made of a very advantageous kind to the whole of the companies.

16,984. But that can only be advantageous to enable the Staines Reservoir water to go all over London; and I should be disposed to agree with you that that is a desirable thing?—It cuts the line of the East London close to the East London pumping station at Sunbury.

16,985. (*Mr. Claude Baggallay.*) But that big New River main from Staines round to the New River system will not be made for six or seven years. It will not meet any immediate necessity?—I am not suggesting for a moment it will. I am speaking of the connexions necessary.

16,986. (*Chairman.*) Supposing a purchase took place to-morrow, I understand that, in your view, the purchaser would do wisely to retain the existing powers of drawing water from the Thames, Lea, and wells, and the existing system of distribution pipes?—Certainly.

16,987. He, therefore, has to work for the joint benefit of all that great coloured district—the whole Metropolitan water area—the united resources of all the present companies?—Yes.

16,988. You say this Scheme No. 2 is not a good way of enabling the resources of the companies to be distributed?—In my judgment it is not the way I should adopt at all.

16,989. I do not pretend to criticise, because I have not quite grasped your idea; but it seems to me that your criticism depends upon this, that you are looking forward to some other supply from outside, namely, from Wales, and that you would your whole system of inter-communication so as to enable you to inter-communicate with that. Is that right?—That is one way. Then I am looking at another thing—the possibility of all the companies being worked from one common centre by one authority.

16,990. I am assuming that with you—I am assuming a purchaser of the whole, but that purchaser will have the pumping stations at Hampton, the emergency station at Seething Wells, all the existing works and plant, and will want, I should have thought, to get at the filtered water for the benefit of any part of Metropolitan Water London, wherever it is, and wherever it is produced?—Undoubtedly.

16,991. Then we have been assured by engineer after engineer that you cannot make the filtered water of one part available for all the other parts of London in any more convenient way than this?—They have all told you that, but they have also all very frankly told you that if this work is carried out they do not think it will ever be used.

16,992. Yes, because all the companies, except the East London, are confident of their own powers to meet the future, but the purchaser who will be answerable for the whole will surely want to use all his resources—to send all his battalions to any one point?—Undoubtedly, but the purchaser does not want his hands to be tied by carrying out such a scheme as is not likely to be used. The works that he would carry out are those which he would like to use every day.

16,993. But they are not likely to be used as long as the companies are separate, but surely they would be used every day if the companies are all bought, and in one hand?—Certainly not that scheme—I should never think of doing it. If I had the whole of the companies in my hand to-morrow, I should never think of spending half a million of money to carry out that scheme.

16,994. I am very sorry your counsel did not put that view of yours to all these witnesses—we should then have heard what they had to say about it—assuming purchase, would you still stick to Scheme No. 2, because, as I understand, Scheme No. 2 represented the best means of rendering generally available the resources now in existence of all the companies.

(*Mr. Littler.*) We never heard of such a suggestion till now.

(*Mr. Balfour Browne.*) I do not know whether you are going to hear counsel, but I think it is more a matter of argument than of evidence.

(*Chairman.*) No.

Cross-examined by Mr. LITTLER.

16,995. (*Mr. Littler.*) Scheme No. 1 was devised in 1897?—It was.

16,996. The power which enables the Southwark and Vauxhall to have 10 million gallons was not got till 1898?—They had a temporary Act in force at that time.

16,997. But they had not got their Act, and they could not tell what Parliament was going to do. However, do you propose to utilize that 10 million gallons at Battersea under Scheme No. 1?—It does not require No. 1 to utilize it.

16,998. How physically can you, when you have got the scheme, utilize it—you cannot utilize the water, No. 1 does not go to Battersea?—No, No. 1 has nothing to do with Battersea.

16,999. I know it has not, and how do you propose to utilize the 10 million gallons surplus we have got now unless you propose to do something more than No. 1 Scheme?—In the way in which Sir Henry Knight pointed out that his own company would do

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it—by passing it on to Battersea and from Battersea to Nunhead and Brixton as they are doing at present, and so through the Tower Subway into the East London district.

17,000. Taking No. 1 as it stands, is it possible?—No, No. 1 is quite a different thing.

17,001. I know, and therefore, under No. 1, you cannot utilize that 10 million gallons?—I am not suggesting you can.

17,002. You know that the Battersea and Nunhead line, which you spoke of, is not part of No. 1 at all. It is part of No. 2. Under your scheme, under No. 1, you cannot utilize the 10 million gallons. Am I not right in putting that?—I merely took what Sir Henry Knight told us in this chair.

(The Witness withdrew.)

(Mr. Balfour Browne.) I do not know whether your Lordship will hear me upon the point.

(Chairman.) It has been a very short point, upon which I have invited any evidence that you had to give or any suggestions that you liked to make in cross-examination, and I am bound to say I have not heard much suggested on the part of the London County Council.

(Mr. Balfour Browne.) We have not suggested a scheme at all. The scheme has been suggested by

(Chairman.) But Sir Henry Knight's scheme is part of No. 2.

(Mr. Littler.) Sir Henry Knight referred to Battersea and Nunhead, which was part of No. 2.

(Chairman.) Yes.

17,003. (Mr. Littler.) Now, I put it to you by No. 1, is it not obviously an engineering impossibility to utilize that 10 million gallons at all?—It does not deal with it at all.

17,004. I know, and I ask you?—But it does not pretend to deal with it.

17,005. But I ask you, is it not clear that that 10,000,000 gallons cannot be utilized under Scheme No. 1?—Certainly not. I never suggested it should be.

Recalled,
Q. 23,113.

them, and I am prepared, if your Lordship is willing to hear me, to comment upon it and to show that it is not a proper scheme to be sanctioned by Parliament in the ensuing session.

(Mr. Littler.) Then, my Lord, we must be heard too.

(The Commissioners conferred.)

(Chairman.) We are all of opinion that it will not be necessary to hear counsel upon this point.

(Mr. Balfour Browne.) Very well, my Lord.

[Adjourned to Tuesday next at 12 o'clock.]

THIRTY-SIXTH DAY.

Tuesday, November 22nd, 1898.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Honourable JOHN WILLIAM MELLOR, Q.C., |
M.P.
Sir JOHN EDWARD DORINGTON, Bart., M.P.
Sir GEORGE BARCLAY BRUCE, Knt., C.E.

ALFRED DE BOCK PORTER, Esq., C.B.
Major-General ALEXANDER DE COURCY SCOTT, R.E.
ROBERT LEWIS, Esq.

CECIL OWEN, Esq., Secretary.

Mr. Balfour-Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.

Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River Company.

Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.

Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.

Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared for the Southwark and Vauxhall Water Company.

17,006. (Chairman.) I should like, with reference to the question of inter-communication, to know whether I have properly understood the evidence. Scheme No. 1 does not propose to bring into the inter-communication system the Southwark and Vauxhall surplus.

(Mr. Pope.) When that scheme was framed, your Lordship will remember, the Southwark and Vauxhall had no surplus, and they did not contemplate, therefore, giving to it any aid.

(Chairman.) I do not want reasons; I want the fact. Is it the fact that Scheme No. 1—

(Mr. Pope.) Has no reference to a surplus from the Southwark and Vauxhall.

(Chairman.) Very well; on the other hand, Scheme No. 2 does not directly contemplate any surplus coming from the Chelsea?

(Mr. Pope.) No.

(Chairman.) Is that right.

(Mr. Pope.) I think that is right.

(Chairman.) I say "directly" because I see in Scheme No. 2 here and there the enumeration of all the receiving companies can get; for instance, in the receipt by Lambeth it is suggested that the supply could be supplemented from the Chelsea Company by connexions, and so on.

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(*Mr. Pope.*) Primarily it does not suggest the Chelsea; as a supplementary means of increasing the inter-communication it does.

(*Chairman.*) So that practically, taking the two large surpluses—those of the Southwark and Vauxhall and Chelsea—these schemes each leave aside one of those?

(*Mr. Pope.*) That is so.

(*Mr. Freeman.*) My Lord, in Scheme No. 1 there are three cases where the Southwark and Vauxhall is connected with the Lambeth, the Kent, and the East London.

(*Mr. Pope.*) Yes, of course.

(*Mr. Freeman.*) You will see that—

(*Mr. Pope.*) But there is no use in going there if there is no water to be made use of.

(*Mr. Freeman.*) I should hardly suppose they would make connexions if there was no water.

(*Mr. Pope.*) You know, as well as I do, they did not have it at that time, but they came to Parliament next year, and said they must have further water.

(*Mr. Freeman.*) In the first Report of the Engineers, which is printed at Question 15,027, it expressly says, in reference to the 9th connexion, "This would enable the Southwark Company to assist the Lambeth Company by affording a supply to their Brixton reservoirs."

(*Major-General Scott.*) If all impediments to the interchange of water were done away with, the Chelsea Company, in the case of one scheme, could deliver water at Hampton to the Southwark and Vauxhall Company to transfer to Battersea, and, in the case of the other, the Chelsea Company could transfer to Campden Hill reservoir. Do you agree with that, Mr. Freeman? Is that so?

(*Mr. Freeman.*) Yes, sir, I think it is so. Of course, if the limits were removed any company could take as much water as it will require.

MR. REGINALD EMPSON MIDDLETON recalled and further examined.

Mr. R. E. Middleton.

17,007. (*Chairman.*) Will you kindly give us your view as to the effect upon the consumer of a purchase of the companies' undertakings?—I think that there would be a loss to the consumer, and still more to the ratepayer, if the conditions of revenue spoken to by a witness of the London County Council were carried out, that is to say, if the rates were reduced to one level for all London, that level being the level of the West Middlesex Company.

17,008. On the other hand, if some intermediate level was taken, the same observation would not hold, I suppose?—It might hold good if that was something below the average of the whole of London, but it might not hold good if the average receipts were to the same extent. It still would, I think, hold good, because several of the costs which the companies have themselves to bear at present, would then have to be borne by the ratepayers. For instance, if there was a severe frost, the damages occasioned by that frost are now borne by the shareholders of the companies, whereas in the future they would have to be borne by the consumer and the ratepayer. Then, also, I do not think that it would be remunerative, because the price which would have to be paid, according to my view, would be such as would not enable it to be remunerative at once. No doubt it would be remunerative in time, but not at the first moment.

17,009. (*Mr. Mellor.*) I would like to ask you this with regard to your last answer: I suppose, if these companies were sold to any public authority, the liability to a frost, like the liability to a drought, would be considered in the price, would it not?—No, I think not, certainly.

17,010. You think not. Do you think no arbitrator would take that into consideration?—Certainly not. I think not, certainly.

17,011. Why not?—Because it is one which every water company and every corporation is liable to just as much as the companies of London.

17,012. Exactly, and when you are selling a water company, surely you would take into consideration all the accidents that might happen to it of that kind?—No, certainly not. I think not. The accidents that might happen are not the act of the company, but the act of God; they are not faults of the company.

17,013. I said nothing about the faults of the company; when you are selling a thing, surely you have to look at that thing all round?—Certainly.

17,014. And if that company is liable either to damage by frost or to damage by drought, surely you would take that into consideration when you came to consider the price?—No doubt if, during the time when the income was considered, a particular frost had happened which had damaged the income of the company during that period, it would be taken into consideration by the arbitrator, but otherwise, if it should not have happened to be so, it could not be taken into consideration; he would judge on the revenues.

17,015. Of course, if the arbitrator did not do his duty, I agree with you that, perhaps, the ratepayer might suffer?—I think he would be doing his duty in taking into consideration the revenue which was earned, but then next year there might be a great frost in which that revenue would not be earned.

17,016. (*Sir George Bruce.*) The arbitrator would take into consideration the past revenue?—Yes.

17,017. He would not prophesy with regard to the future, but there are droughts and frosts in the past which have affected the revenue in the past, and to that extent he would take them into account?—Certainly.

17,018. (*Mr. Lewis.*) But is not that an element which appears in the profits of the companies at the present time; if you have a heavy expenditure, it means that you have less to divide?—Certainly.

17,019. Then the same thing would apply equally to the purchaser?—Not necessarily, I think.

17,020. But why?—Because the period of calculation is generally taken over a certain limited number of years; if during that limited number of years some exceptional cause had happened which caused the revenue to be lower, it would be taken into consideration; if it had not happened during that short period of years and it happened in the next year, then the buyer would be the loser and not the seller.

17,021. But still the buyer would be in precisely the same position as the companies?—Exactly in the same position.

17,022. It is a matter that enters into the profit and loss of the companies?—They would be in exactly the same position if they did not happen to have a severe frost in that short period.

17,023. (*Sir John Lorington.*) The effect of these accidents, then, appears in the average revenue?—Certainly.

17,024. And therefore they would be so far taken into account?—Certainly.

17,025. Because they are in the average revenue?—Certainly.

17,026. (*Mr. De Bock Porter.*) Then it would affect the price which they would have to be paid?—It would affect the price if a great frost had happened during the period on which the price was calculated.

17,027. (*Chairman.*) Then does not your observation come to this, that the average past affected by frost or other accidents would affect the price?—Certainly over the whole average.

17,028. But an unforeseen or an abnormal frost or other accident would not appear in the price?—That is so; that is what I mean.

17,029. (*Mr. Mellor.*) Do you mean to say that you are not to judge of the future by looking at the past in a case of this kind?—Certainly.

17,030. What?—You would judge of the future by looking at the past.

17,031. Exactly; if you find in the past a liability to frost or a liability to drought, surely you would take that into consideration in looking into the future?—Surely, if that is taken on a certain number of years you take everything that is included in that certain number of years.

(*Mr. Mellor.*) Every arbitrator ought to take a sufficient number of years, otherwise he cannot give you a right judgment.

Mr. R. E. Middleton. (*Mr. Littler.*) You would never select an abnormal year as one of your test years for revenue.

22 Nov. '98 (*Mr. Freeman.*) No, but you would take it in the average.

17,032. (*Chairman.*) I suppose it means that if these companies had been bought in 1896 the arbitrator would not have taken into consideration the effects that we now know resulted from the drought of this year?—No, he would not have done that.

17,033. (*Mr. De Bock Porter.*) But the drought of this year must be an element in fixing the price in the future, supposing it is done in the next few years?—I should say not—not unless it was some company that had suffered by it or had to pay something more for it.

17,034. (*Sir John Dorington.*) The drought of this year would appear in the average revenue?—It would appear in the average revenue of one company but not of all the others.

(*Sir John Dorington.*) Of course it would in the one company.

17,035. (*Mr. Lewis.*) The drought has not affected the revenue of any company, has it?—I do not know that.

(*Mr. Pember.*) Their net revenue, it must.

(*Witness.*) If they have purchased water, it has.

17,036. (*Mr. Lewis.*) If they are authorised to charge for the water whether it is available or not, it is not likely that drought would affect the revenue very much?—I do not suppose it has affected it very seriously, but it would affect it if they purchased water.

17,037. (*Chairman.*) We have heard, for instance, that the East London have continued their charges, for high service, though all high cisterns were without water?—Yes, that is so, I believe.

17,038. Do you think, that if the London County Council were the purchaser, they would reduce the rates to a uniform level?—I certainly understood their evidence was that they intended to reduce it to the lowest level.

17,039. Are you prepared to justify differential rates for such a community as that of London?—I think undoubtedly that differential rates in a place like London are more fair than one even rate all over. There are high lying districts and low lying districts, and the cost of supplying the high lying districts is much greater than that of the low lying districts. There are other circumstances which make it more expensive to supply in a poor district than it is in a richer one.

17,040. (*Mr. De Bock Porter.*) But what you say would hardly apply, for instance, to a district like the Lambeth district; there, high rates are paid alongside a company supplying at a much lower rate, where the conditions are practically the same?—I think scarcely so. I should say that the pumping in the Lambeth district was more expensive than it is in the other district alongside. But I am not anxious to support the whole of the rate of the Lambeth; I happen to live in the district myself, and I think it is rather high. Still, I do think that differential rates are more fair than one even rate for the whole of London.

17,041. But the Lambeth Company and the adjoining company both draw their resources from the Thames?—That is so.

17,042. Both have the same amount of pumping, and yet charge very different rates?—But the cost of the pumping may be quite different.

17,043. (*Chairman.*) "May be," is it?—I think it is.

17,044. Why should it be different for the Lambeth Company?—The length of the mains is greater, and the cost of the pumping, as a matter of fact, does work out to a higher figure. I cannot give you all the reasons. I think only their own engineer could tell you that.

17,045. Does not that look like mismanagement on their part?—No, I have no reason to think so.

17,046. (*Mr. De Bock Porter.*) They would be better served by the other company, which is close by?—No. I do not think there is any reason for thinking so.

17,047. (*Mr. Mellor.*) Then, as I understand you—I really only want to do that—you think that where the

ground is higher, there ought to be a higher rate?—I think so, certainly.

17,048. And where the ground is lower there ought to be a lower rate?—Where you have extra pumping, I think that there ought to be a higher rate for that than on the lower level.

17,049. (*Mr. De Bock Porter.*) Is it not the case that the New River Company, which serves some of the higher districts, has the lower rates?—They bring in their water at a level nearly 100 feet higher than any other company in London, and therefore they can naturally afford to do their pumping for less.

17,050. (*Chairman.*) Can you say from your own experience whether the differential rate paid for water affects the rental of the house?—I should be sorry to say that I could prove that, but it is my strong impression that it does affect the rental.

17,051. You mean that for two houses equally good the landlord would get less if he lived in the Lambeth district where the water-rate is high than if he lived in the Southwark and Vauxhall district where the rates are lower?—I believe that there is such a difference in that respect.

17,052. You say you "believe." Have you any facts to rest your belief upon?—I have not any absolute facts; I could not produce them.

17,053. Now, would not a purchase effect savings, both in maintenance and in management?—I do not think so. I think that a company which has been worked by a board which has been in existence for a great many years, and which is paid to do its duty, is more likely to be economical than one which is of a fleeting character, which is unpaid, and which is unlikely to effect economies. Moreover, I think municipal management does not, as a rule, effect economies.

17,054. That observation, then, would not apply to a purchase by a special board of experts created *ad hoc*?—No, it would not.

17,055. Does the item of compensation to directors, officials, and so on, in your judgment form an element in the consideration of the expediency of purchase?—Undoubtedly the price would be raised in accordance with that; at least, I presume so. The purchaser would have to pay for the provision to the directors and the officials. Certainly there was a clause in the Lambeth Purchase Bill to that effect, and I presume that that would come out of the purchaser's pocket, and not out of the seller's pocket.

17,056. (*Mr. Mellor.*) But they would have to keep all the officials, would they not; the officials, apart from the directors?—That I cannot say.

17,057. They probably would?—It would depend upon themselves.

17,058. They must either keep them on or supply their places with fresh ones?—Yes, or pension them. If they did not keep them on they would have to pension them.

17,059. (*Sir George Bruce.*) I suppose they would contemplate having fewer officials?—No doubt.

17,060. Therefore, some would have to be pensioned off?—Perhaps.

17,061. (*Chairman.*) Have you at all estimated in your own mind what that item comes to?—No, I have no means at my disposal for estimating what it would come to.

17,062. Would it not be a comparatively insignificant item?—I do not think it would be a very large one, but it would be an item.

17,063. (*Mr. De Bock Porter.*) It is an item which is taken into account in every municipal acquisition of waterworks, I presume?—From a company I have no doubt that it is.

17,064. (*Mr. Lewis.*) But the pensioning of the officials would not lead to an increase of expenditure, because, if an official retired, you would not fill up the vacancy, and so you would save the difference between his full salary and his pension?—That is, supposing you were able to do that.

17,065. You would not pension him if you cannot do without him?—It depends entirely.

17,066. Therefore a scheme of retirement surely means a reduction in expenditure?—Not necessarily, I think.

17,067. Unless you supply the vacancies?—Of course it would if you did not supply the vacancies; but I should say my own feeling would be that they would have to have more officials rather than fewer.

17,068. (*Mr. De Bock Porter.*) Surely if the whole concern were in one hand there would be fewer officials than when it is in eight hands?—I do not think so, and I do not believe it. I believe that it would necessitate more rather than less.

17,069. You must have a very poor opinion of municipal management?—I am not speaking in that respect at all. I was speaking from the size of the machine. The machine is so large that I think the management of the whole as one would necessitate a larger staff, at any rate, at first, than the eight machines have.

17,070. (*Chairman.*) A larger staff?—Yes, I think so.

17,071. (*Mr. De Bock Porter.*) But is not one of the items of expense in the water companies the collection of the rates?—Certainly.

17,072. There must be a very large number of collectors?—Certainly.

17,073. Assuming it was in the hands of a municipal body collecting other rates, could they not be collected at the same time as the municipal rates?—That is a matter I could scarcely speak to.

17,074. That is a reasonable proposition, is it not?—I presume that they could—yes.

17,075. Would that not lead to a very material reduction?—That would lead to a reduction if it could be done, certainly.

17,076. It is one of the principal items of cost in the present management?—I do not know in the least what the cost of the collection of rates is.

17,077. (*Mr. Mellor.*) Can you say that the directors ought to be compensated?—I have really not looked into that matter. I took it from the Lambeth Purchase Bill that they were to be compensated, but the amount I did not look into at all.

17,078. I am merely asking you as to what the principle should be?—I could not say. As far as I understood from that Bill there is no principle laid down in the Bill for it.

17,079. (*Mr. De Bock Porter.*) Then with regard to the principal assistants, I presume that no municipality would employ eight engineers to look after the water supply?—I think they would be obliged to do so.

17,080. (*Mr. Lewis.*) But you would not want eight secretaries, eight accountants, eight cashiers?—No, you would not want them in that form, but I think you would want the same staff.

17,081. But not such an expensive staff?—That I can scarcely say, because I do not know what the staff costs at present.

17,082. But that would be an economy, and we are on the question of expenditure?—Yes, I do not believe that the economy would be effected. That is all I can say. The details of it I really am scarcely able to go into.

17,083. (*Chairman.*) Then let us go to the largest item in any purchase, namely, the price to be paid to the companies; how, in your view, would that have to be fixed?—By arbitration under the Lands Clauses Act, I presume.

17,084. Why do you say under the Lands Clauses Act?—Because that has been the regular custom. So far as I know there is no precedent for purchase in any other manner unless by agreement.

17,085. (*Sir John Dorington.*) You see no reason for departing from the normal practice?—I see no reason for departing from the normal practice.

17,086. (*Mr. De Bock Porter.*) Would you see any objection to the procedure suggested by Mr. Banbury when he was here, of giving an equivalent annuity?—I do not remember the circumstances very well.

17,087. (*Chairman.*) Mr. Banbury's scheme was to take the existing income of the eight companies, and to give to each shareholder, trustee stock transferable at the Bank of England, which should produce at 2½ per cent., I think, the same income?—I think that the shareholders are entitled to a prospective value if there is any. What that prospective value is I do not know—whether it is anything or nothing—but I think they are entitled to a prospective value if there is one, and that that could only be settled by arbitration, and that

so far the annuities would be perfectly satisfactory. If there was a prospective value, it would have to be settled by the arbitrator, and added to the annuities.

17,088. (*Sir George Bruce.*) The purchaser would be entitled to a prospective diminution if there was one?—If it could be proved there was a prospective diminution, I should say the purchaser was entitled to that.

17,089. (*Mr. Mellor.*) Because it was necessary to incur large expenditure, then the purchaser would be entitled to that?—No, I do not think that necessarily follows, because a large expenditure might be productive. If the large expenditure was unproductive, undoubtedly it would be so.

17,090. (*Chairman.*) Take such an expenditure as we have been discussing, perhaps at undue length, namely, the provision of sufficient storage to satisfy what I may call the Staines Reservoir conditions; that would not be a profitable expenditure?—That would simply come in, I presume, against revenue; you would be calculating on revenue, and, therefore, as it brought in no revenue, your calculation would be the same. It would not be a diminution.

17,091. If there is a prospective expenditure of some millions—for the estimates differ enormously, and therefore I cannot state a figure—but an expenditure of some millions, in order to bring the existing supply into a satisfactory state, that would not be productive of revenue?—That would not be. If you calculated it on the revenue, it would be accounted for, because the net revenue would be accounted for, because you have to supply the money for the construction of those works, and to supply the interest on it which would be a deduction from the net revenue; therefore it would be already accounted for.

17,092. (*Mr. De Bock Porter.*) You would say the prospective unremunerative expenditure would be a set-off against prospective increase, would you not?—If it had been already brought into account it could not be so. It would be already brought into account by the interest already paid.

17,093. But if I buy an undertaking knowing I have got to spend a very large sum of money to maintain its income, surely that is an item to take into account if I am going to purchase the business?—If the companies have already paid a proportional quantity of that, and it is already deducted from their revenue, then they have already accounted for that deduction in the loss of revenue already incurred.

17,094. They have only expended the initial part of the expenditure, not the whole that was required; they have only just made a beginning?—That is so.

17,095. But after that the larger sum that has yet to be spent surely is to be taken into account?—Certainly, but this would be only a proportion of the same deduction, and it might be only the same deduction from revenue which has already taken place.

17,096. (*Chairman.*) But to take the facts as we have them, we know that to provide the necessary storage under the conditions laid down by Lord Balfour's Commission for the 130 million gallons at present drawn from the Thames and supplied by the companies, considerable expenditure is necessary in storage over and above what has already been incurred?—No, I think that is not the case until you bring this year into account, and you must also bring into account the question of the limit at Teddington, because that was not settled by Lord Balfour's Commission.

17,097. We have been told all along that at present there are only 866 million gallons storage provided under the Staines scheme?—There is nothing provided under the Staines scheme.

17,098. Really, I have tried in vain to get from you—it was promised to be supplied—the capital expenditure necessary to secure that amount of storage which has been brought into the capital account of the companies?—It is a very much larger amount than that, but what it is I could not tell you, because each company has got its own accounts, which I have not access to. A very large amount of storage, very much in excess of that, has already been constructed, and storage for far more than sufficient to provide for the 130 millions is in course of construction.

17,099. (*Major-General Scott.*) What storage has been constructed in excess of the 866 millions?—The Southwark and Vauxhall are constructing storage, and it is very nearly completed—storage for 327 millions.

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Mr. R. E. Middleton. 17,100. (*Chairman.*) Is that not taken into account in the 866 millions?—I can account for the rest of it apart from the 327, the Southwark and Vauxhall 136 millions, which has been constructed, the Lambeth 125 millions, the East London 5 millions, the West Middlesex 397, and the Grand Junction 64½.

17,101. (*Major-General Scott.*) All that is constructed?—That is all constructed.

17,102. And that does not include what the Southwark and Vauxhall are completing?—That does not include what the Southwark and Vauxhall are completing; they are completing 327 millions. Then the Lambeth are also completing 335 millions of storage.

17,103. But then they have not expended that money?—They have expended a large proportion of it—a very considerable amount of it.

17,104. (*Chairman.*) That does not appear, does it, in the capital account of the companies, showing what capital is at present receiving dividend?—A certain proportion of it must.

17,105. (*Mr. Pember.*) Or interest?—Or interest.

(*Mr. Pember.*) It would appear most of it in the borrowed capital.

(*Chairman.*) In the debentures, yes.

(*Mr. Pember.*) My Lord, is it not perfectly clear that the true statement of the facts is this: if there is a large amount of money hereafter to be spent on storage that will create, of course, a certain amount of interest to be met, and unless that interest so to be met is coincident with a proportionate increase of income there must be a diminution of net income, but if there is a proportionate increase of income then there will be no diminution in the net income. Why need we go on for an hour about this?

(*Chairman.*) Because Mr. Middleton will not answer a simple question. I put that to him.

(*Witness.*) I have been trying. I am sorry, my Lord, because I quite agree with Mr. Pember.

17,106. (*Chairman.*) If there is an immediate prospective expenditure which the purchaser will have to incur, that ought to go in diminution of the price that he pays?—Certainly, and I have been trying to show that it has already gone in diminution.

(*Chairman.*) If it has, then, of course, there is no prospective increase.

17,107. (*Major-General Scott.*) What is the amount that you now calculate to meet the storage conditions for 130 million gallons of daily supply?—It depends entirely on the question of what the limit is to be at Teddington, and what year you are to take for that calculation.

17,108–9. Take the 200 million gallons limit and take 1898 as the year?—Then under the conditions of 1898 the figure becomes 8,314 million gallons.

17,110. That is for 185½ million gallons, is it not?—No, for 130 million gallons.

17,111. If reservoir conditions, by which I mean the same conditions are imposed, regarding the quantity to be left in the Thames as is now imposed with regard to the Staines Scheme, then there would be an obligation to construct about 8,000 million gallons storage, minus what has already been constructed?—That is so.

17,112. Can you say what the balance would be if you deduct from that amount 866 millions?—The balance from the storage which is contemplated, which is already authorised—

17,113. (*Chairman.*) Now you go to authorised; if it is authorised, it does not appear in the—?—Would be 2,138 millions, but that quantity is authorised for a supply of 185½ millions, and it ought to be fairly compared with that, not with the 130 millions.

17,114. (*Major-General Scott.*) But I was asking you what storage would be required for 130 millions, which is the present supply—at least, it was the supply until recently—which was authorised to be delivered without any conditions at all?—Then that storage is 8,314 million gallons and the quantity of storage authorised up to the present time is 6,176 millions, leaving a balance to be made up of 2,138 millions.

17,115. But then that 6,176 millions has not been completed, and a large proportion of the capital belonging to that has not been expended?—That is so, certainly.

17,116. (*Chairman.*) We have been told over and over again—I do not know whether it is wrong—that the capital has been expended only for 866 millions?—The whole of the capital that has been expended is only for that 866 millions.

17,117. Very well, that is all that appears, therefore, in the revenue-earning capital of the companies upon which the arbitrator would have to proceed?—Yes, on the revenue earnings.

17,118. And all the balance would be a deduction to be made from the purchase price?—That is so.

(*Mr. Pember.*) Unless—

17,119. (*Chairman.*) Unless there was a prospective income to balance that?—Yes.

(*Mr. Pember.*) That must cover the whole principle; the rest is a matter of detail.

17,120. (*Chairman.*) Yes, but I cannot get the principle. Now then as to prospective income. Do you consider that these companies have got a prospective increase of income before them or not?—I think they have. See 19, -39.

17,121. (*Major-General Scott.*) There is no prospective income with respect to the 130 million gallons?—No.

17,122. That is the point, I think, of his Lordship's question?—I beg your pardon; that was not what I understood. It was simply that there was a prospective increase in income.

17,123. (*Chairman.*) Even for the 130 million gallons the quinquennial valuation may produce some prospective increase of income?—Yes, that might do so.

17,124. (*Mr. De Bock Porter.*) But it would be hardly sufficient to defray the interest upon the capital that has to be expended to secure it?—I do not see why it should not; but that is entirely a problematical statement.

17,125. (*Mr. Pember.*) A gradual filling up of the districts would do that, we hope; it is a mere question for the arbitrator?—Not if that is based upon the 130 million gallons, because the 130 millions is being supplied at present, and therefore no filling up of the district could affect that 130 millions one way or the other.

17,126. (*Chairman.*) The only thing that can produce an increase of income from the supply of that 130 millions is some raising of the valuation?—That is so.

17,127–8. Is the raising of the valuation a profit to those companies?—That is a question that I am utterly unable to answer definitely. As a whole, I cannot possibly say whether it does increase it or not, but there are a very large number of items which tend rather to decrease than increase the advantage of the quinquennial valuation.

17,129. A large number of items?—Yes.

17,130. Now, which items?—The fact is that the larger charges are put on railways and business undertakings, and on the water companies themselves, and that they have to pay very largely towards this increase in the quinquennial valuation.

17,131. For the railways and the other industrial undertakings they supply by meter?—Yes. Therefore, they get no benefit from the increase in the valuation.

17,132. And on the other hand, you say they have to pay larger rates themselves?—Yes.

17,133. Can you give us what the increase of rates on the companies has been?—In 1871 the rates were 70,423*l.*, and in 1896, 235,630*l.* In the total period from 1871 to 1896, inclusive, the amount paid in rates was 3,342,900*l.*

(*Sir John Dorington.*) So that, in the event of purchase, a valuable ratepayer would be lost?—That is so.

17,134. (*Chairman.*) You are assuming that the purchaser would not have to pay rates?—I am assuming the purchasers would not pay rates to themselves. If they paid the rates to the local authorities—the vestries—then, of course, the thing would be the same.

(*Mr. Freeman.*) They are rated now for their sewers.

(*Mr. Pope.*) Do the County Council pay rates?

(Mr. Freeman.) Yes.

17,135. (Chairman.) Let us suppose the London County Council to be the purchaser; they would have to pay the rates in Middlesex, Surrey, Essex, Kent, and so on, would they not?—No; they would have to pay them, I presume, to the vestries.

(Mr. Freeman.) They do now, my Lord, on their property; all their property pays rates.

17,136. (Chairman.) So I should have thought. These rates, I suppose, are what—poor rates, sewer rates—what rates are they that amount to those sums that you have given us?—They are poor rates, to the best of my knowledge.

17,137. (Mr. Mellor.) There is a general rate in London now, is there not, in which the poor rate and the school board rate are all put together?—It is what we call the poor rate, I think; all these items are put down in it.

17,138. (Chairman.) Then I do not quite see why the purchaser would not have to pay those rates just as much as the companies do?—I had got it into my head for the moment that they would have to pay it into their own pockets; but, of course, they would have to pay it to the vestries; that is clear.

17,139. (Mr. Lewis.) Have you considered this element in the question of purchase: the purchasing authority would be spared the operation of the Sinking Fund clause; now, that must operate very much against new capital in connexion with companies?—But I do not quite see why the purchaser should be liberated from that.

17,140. Because that is established for a particular purpose, that is in anticipation of purchase with the understanding that when purchase was effected there will be an end of the sinking fund?—So far, of course, as that is so, undoubtedly that would add to the value of the income.

17,141. (Chairman.) Probably, if they are a municipal body, or a public body of any sort, they would have to create a sinking fund of their own; therefore, they would not be subject to the sinking funds which the companies are placed under?—No, I quite understand that, and in the calculations I have made, I have not taken into account their sinking fund any more than I have taken into account a sinking fund against the companies.

(Mr. Pember.) Surely, my Lord, the sinking funds to which the companies are now subject are only temporary matters, because they were only imposed in view of the probability of a speedy purchase.

(Chairman.) Yes.

(Mr. Pember.) And I take it that, in consideration of the general value of the property, it would be unfair to consider those sinking funds *in perpetuo*.

(Mr. De Bock Porter.)¹ But the operation of those Sinking Fund clauses in the future will be very large indeed; and surely they will be taken into account in the arbitration?

(Mr. Pember.) They are never intended to go on to make them large. The idea is for the purchase to take place before they get large.

(Mr. Freeman.) There is nothing to show that in the Act.

(Mr. Pember.) Indeed, it would be the wickedest thing ever done by Parliament if that were so; and I do not suppose it.

(Mr. Freeman.) There is nothing in the Act to say that.

(Mr. Pember.) Everybody knows that it is the idea.

(Mr. Freeman.) There is not a suggestion of it.

(Mr. Pember.) Everybody knows that all the discussions in Parliament, both in Committee and in the House, show that that is the meaning.

(Mr. De Bock Porter.) But it would be impossible in any arbitration to overlook the fact that the Sinking Fund clauses did make an enormous charge in the future.

(Mr. Pember.) The charge would only become enormous on the supposition that purchase was indefinitely postponed; but surely, as I say, the principle of those sinking funds was that purchase should not be indefinitely postponed, and, therefore, that that contingency never should arise.

(Mr. Freeman.) There never was such a suggestion made.

(Mr. De Bock Porter.) I see, referring to the accounts, that that item I mentioned just now of the collection of the rates amounts to no less than 50,000*l.* a year—a very large sum.

(Chairman.) For the collection of the water rates?

(Mr. De Bock Porter.) Yes, the collection alone amounts to 50,000*l.* a year.

17,142. (Chairman.) I think we have got thus far at present, Mr. Middleton. You said that any future expenditure upon storage reservoirs for the existing supply would be a deduction from the cost of purchase?—So far as it had not been already entered into the account.

17,143. And, on the other hand—which is, perhaps, in favour of the companies—their income would have to be taken as a progressive income, owing to the increase in valuation that takes place from time to time in London?—Both owing to the increase in valuation and owing to the increase in supplies.

17,144. On the other hand, would expenditure, in going to a new source of supply like Wales, be a deduction from the purchase money, or an addition to the cost the purchaser would incur?—I do not think I quite follow you.

17,145. We know that many people are of opinion that you ought to go to Wales for a further supply beyond the existing supply from the Thames?—Yes.

17,146. Very well; for that a considerable expenditure would have to be incurred—I will not say how much at present—which for many years would be unproductive?—Yes.

17,147. Will the probable necessity of that future expenditure be a deduction from the cost of purchase?—I must meet that at once by saying that I do not believe in the necessity. If there were a necessity, of course it would be a reduction like the construction of any other reservoirs; but I do not believe in the necessity.

17,148. (Sir George Bruce.) So that, if the authority went to Wales for an additional supply, that would be in order to supply the additional number of millions of people?—Certainly.

17,149. You could hardly put the cost of that as a deduction from what it would be necessary to expend in order to get what the Thames would supply?—No, certainly not; but I understood his Lordship to mean that this was to be made by the companies—not by the authority.

17,150. (Chairman.) I am asking you questions now to obtain, if I can, your view upon the financial results of purchase. I understand you to be of opinion that the cost of purchase will be diminished, or ought to be diminished, if the arbitrator does his duty properly by what is expended, in order to bring up the Thames storage for existing supplies to their proper state?—By anything which is a deduction from revenue which is not otherwise accounted for in the revenue.

17,151. *Inter alia*, what I have just put to you?—Yes.

17,152. Now, then, the cost of getting on additional supply from Wales; in your judgment, would that, or would that not be an item of deduction, or would that be an item of cost that would fall upon the purchaser in addition to his purchase money?—Under the present conditions it would fall upon the purchaser in addition to his purchase money, because the companies have an adequate supply.

17,153. On the other hand, that Welsh expenditure would not be remunerative, I suppose, for a considerable time?—No.

17,154. Let us now take another aspect, say, consequence of purchase. Suppose one purchaser of the eight companies—the London County Council we will say—in your judgment, would it be practicable or convenient for them to supply in bulk the outlying counties, such as Middlesex, Surrey, Kent and Essex?—I do not think it would be convenient, and I think it would be an exceedingly expensive arrangement, necessitating a large amount of alteration in the present mains, and that it would not be convenient for the outside authority.

17,155. We will just take that a little more in detail, if you please. I wish you would explain to

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Mr. R. E. Middleton. us, if you can, what would be the difficulties for the London County Council to supply in bulk these surrounding Metropolitan counties?—The mains of the companies have not been laid with any idea of supplying in bulk outside a given area. They have been laid across the county boundary in all directions, and in many cases there are a very large number of mains crossing the boundary, some of them supplying from outside inwards, others supplying from inside outwards, and some crossing in both directions. If supply were to be given in bulk from the inside outwards, many of these mains would have to be relaid, and meters would have to be placed on all of them.

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—83.

17,156. Meters?—Yes, meters to measure the quantity. In some case, there are of large mains alone a very considerable number crossing the boundary.

17,157. Crossing the boundary of what?—Between the boundary of the county of London and the outside authority. For instance, in the East London district there are 11 mains crossing the boundary between the county and the outside.

17,158. Why would that prevent the London County Council, if they were the purchasers of the whole, from supplying Essex in bulk?—Because they would have to supply through all these mains, and to meter all the mains which, in the present condition of things, supply from outside inwards, not from inside outwards.

(*Mr. Pember.*) When supply in bulk is given by one authority to an adjoining authority, it is, I was going to say nearly, but I think I might say it is always done through one main at one spot; here, in the case of one company alone, it would have to be done at 11.

(*Mr. Pope.*) Unless those 11 mains were taken up, and a new system relaid.

(*Witness.*) And a new system placed instead of them. Not only so, but the water would have to be brought from the outside inwards, and then delivered out again because, at present, all the mains of supply are outside the county.

17,159. (*Chairman.*) In the case of the East London?—Yes.

17,160. (*Major-General Scott.*) The water under present arrangements is travelling from outside into the county of London?—Inwards.

17,161. Towards the county?—Towards the county.

17,162. (*Chairman.*) Are there no existing mains that would carry that same water from the inside of the county of London out again into Essex?—No, there are none. At the present time the ones into Essex go from outside, and they do not come into the county of London at all; they go from outside into Essex. The county boundary is the division between Middlesex and Essex, there—the River Lea.

17,163. (*Sir John Dorington.*) That would have to be taken to them by meter, or the quantity that comes into London could be subtracted from the total quantity supplied at the pumping stations?—You might do it in that way.

17,164. Then it would be a supply in bulk to the London County Council, instead of a supply in bulk from the London County Council, to Essex?—That is so, but I do not think the London County Council would exactly appreciate the arrangement.

17,165. But that would be the effect?—That would be the effect.

(*Mr. Pember.*) Then you would have an enormous number of bodies constituted in order to do that. The outside people would have the control in each case, and you must have a body to give the control.

(*Chairman.*) The suggestion, of course, was that the Essex County Council should be the body.

(*Mr. Pember.*) That would be one.

(*Sir George Bruce.*) All the other counties he means would want one.

17,166. (*Chairman.*) Just to finish with the East London, where are their service reservoirs?—I think most of the service reservoirs are outside the boundary.

17,167. Of the county of London?—Yes.

17,168. Please say what boundary you are speaking of, or else we shall get into confusion?—In this case, I am speaking of the boundary between the county of London and the outside authorities.

17,169. Where are the pumping stations?—Outside—at Lea Bridge.

17,170. Where are the filter beds?—The filter beds are outside.

17,171. To supply Essex in bulk, therefore, the London County Council would have to bring the whole of their filtered water from outside their county inside?—And then take it out again.

17,172. Fresh service reservoirs would be necessary?—Fresh service reservoirs would be necessary for themselves.

17,173. And for Essex?—No; I think Essex, so far as the present supply is concerned, might be supplied from the ones that are at present in Essex; but that would be an exceedingly complicated matter, and I think no engineer would arrange it in that way if he could avoid doing so. I am only speaking of things as they are, not as an engineer would make them.

17,174. In the New River Company's district, are there difficulties in the supply in bulk by the county of London?—The mains cross and recross the boundary between the county of London and the outside authority 38 times. Besides that, there are smaller pipes, not mains, but service pipes, which cross the boundary in larger number. The whole of those would have to be metered unless they were drawn together into one supply, and then carried to a particular point and delivered to the outside authority again into the several supplies.

17,175. What difficulty would there be in doing that—in collecting, as you say, the whole into one source of supply?—You have nearly seven miles of boundary, and these 38 mains cross at different points along that seven miles. You would have to collect all those by a collecting pipe all down one side, and a collecting pipe all down the other, so as to meet into one. That would mean a very large amount of expense. It is not an engineering impossibility at all, though it would mean a very large amount of expense, because you have not got a street running right round along the edge of the boundary, but it is broken up into cross streets, and you would have to destroy a large amount of house property if you were going to connect it directly with a main around the boundary; or you would have to take the main through a number of back streets for a considerable distance away from the boundary, and then connect it up again outside the boundary in a similar manner. It would be an expensive and a very complicated arrangement to cut these off into one single main.

17,176. (*Major-General Scott.*) Then there is the complication of another main in the same street?—Yes. In several cases—at any rate, in two cases in the New River district—in Hornsey Lane and Stroud Green Road—there are three mains in the same street; the boundary is in the centre of the road, and it would be next to impossible to say to which part the mains, or some of them, at any rate, belong—whether they belong to the outside or to the inside authority.

17,177. (*Chairman.*) Surely the boundary is capable of ascertainment?—Yes, but supposing it came in the middle of the middle main. You have got three mains, and it may take up a piece of the middle main in one case, the whole of it in another, and on the other side the other authority might take out a piece of the main in another case, or the whole of it.

17,178. (*Sir John Dorington.*) And the service pipes go out from that main in both directions?—Yes.

17,179. Both for inside and outside?—Yes.

17,180. (*Chairman.*) What mileage of mains is there, or of roads rather, with these three mains in them?—About two miles of road.

17,181. Where are the pumping stations of the New River Company?—Entirely in the outside district.

17,182. Outside the county of London?—Yes.

17,183. Where are their service reservoirs?—Four of the service reservoirs are within the area, and the rest, containing half the company's capacity, are without the area.

17,184. What would be the difficulty in making those service reservoirs outside the area over to the outside county authority to distribute the water that they receive in bulk from the London County Council?—Because at present some of those that are inside supply outside, and some of those that are outside

supply inside, and you would have to cut them off and re-arrange the mains. The thing is not at all impracticable, but it is expensive, and would cause an immense amount of trouble in taking up the roads for relaying and connecting the mains.

17,185. (*Sir John Dorington.*) It would be a reconstruction of the whole system, would it not?—It would be practically a reconstruction of the whole system.

(*Mr. Pember.*) It is one of the financial aspects of the purchase; that is what it comes to.

17,186. (*Chairman.*) Take the West Middlesex Company; are there similar difficulties there?—There are similar difficulties, though not quite to the same extent. There are about 20 main pipes crossing the boundary in West Middlesex, and there are some 61 smaller mains, about half of which supply inside the county of London and about half of which supply outside, and which cross the boundary.

17,187. What county would it be there in the West Middlesex district—it would be the county of Middlesex, would it not?—Middlesex, I think.

17,188. So that if Middlesex received from the London County Council, as purchaser of the whole, a supply in bulk, and took the distribution into their own hands, the whole of that system would have to be remodelled, would it not?—It would have to be remodelled.

17,189. Is the Edgware Road in the West Middlesex district?—That is in the West Middlesex district. The boundary is in the centre of the road, with a 24-inch main outside it and a 21-inch main inside the county of London. The latter main is the one that supplies the service mains at the cross streets, both inside and outside.

17,190. So that all those service mains would have to be metred if they are to be kept as they are?—That is so.

17,191. What length of the Edgware Road has that central boundary?—It is, I think, about two miles.

17,192. Are the reservoirs and the filters inside or outside the county of London?—The subsiding reservoirs are at Barnes outside the county of London, and so are the filters. The company, of course, pump from the Thames at Hampton.

17,193. Are not most of the reservoirs within the boundary?—The service reservoirs are, but they are, of course, small in comparison with the storage reservoirs at Barnes.

17,194. Where are the Hammersmith works?—They are just within the county of London.

17,195. What is the length along the county boundary in the West Middlesex district?—Seven miles.

17,196. I do not know whether there is any other material fact in connexion with West Middlesex bearing on this question of supply in bulk?—I do not think so.

17,197. Then let us go to the Grand Junction Company's district; what are the circumstances there?—There are four trunk mains delivering from the outside district into the county of London.

17,198. Where are the pumping stations and the filter beds?—The pumping stations are at Hampton and at Kew.

17,199. And the service reservoirs?—The service reservoirs are at Campden Hill, within the county, and at Hanger Hill.

17,200. That is outside the county of London?—Yes.

17,201. What proportion of the total filtered water supplied is inside the county of London and what proportion outside?—The Campden Hill reservoirs contain 18 million gallons, but they are not drawn upon to anything like that extent, while the Hanger Hill reservoirs contain 53 millions.

17,202. That would be about 70 per cent. of the whole?—Yes, 70 per cent.

17,203. Outside the county of London?—Yes.

17,204. Do the East London mains come near the Grand Junction mains?—There is a 36-inch main belonging to the East London Company which comes from Hanworth right through London to the service reservoir at Hornsey, and comes alongside the Grand Junction main.

17,205. I am sure it is my fault, but I do not quite see why that is an element of difficulty or embarrassment on this question of the supply in bulk?—Because that is a main supplying from the outside inwards—in towards London—and it forms part of the East London Company's supply, and they would have to take it. It would have to be connected to some other supply at the west end of London if it was to be useful to the County Council, and to again supply outside or inside. It would have to be entirely disconnected from its present supply, and instead of going right across to Hornsey to the East London district, it would naturally be used for supplying in the west of London—at least, I should say so.

17,206. (*Sir John Dorington.*) That main apparently goes right past the Hornsey Reservoir and goes right on as far as the Hodder Lane Reservoir—or is that another one?—I think not. It supplies Hornsey Wood; the others are supplied from Lea Bridge.

(*Chairman.*) Is Hornsey Wood within the county of London?

(*Sir John Dorington.*) No, it is outside.

17,207. (*Chairman.*) I see, it is just outside. The next company going round London is the Chelsea?—The works there are almost entirely outside the county of London, and all the supply is within the county of London—the whole of it.

17,208. That means, I suppose, that in order to make the Chelsea supply available for supplying the county of Middlesex in bulk?—The county of Surrey in bulk—

17,209. Some new main would have to be laid from the service reservoirs?—Yes, that is so.

17,210. What extent of main?—That entirely depends on what area of Surrey was to be supplied by them. They have got no mains for supplying in Surrey at present except their supply mains to London. The water is pumped up into a reservoir on Putney Heath at present, and supplied by gravitation over Putney Bridge.

17,211. The water comes from Surbiton, does it not?—It comes from Surbiton.

17,212. To Putney Heath?—To Putney Heath, and thence it passes over Putney Bridge.

17,213. Those Surbiton works are outside the county of London?—They are.

17,214. And so is Putney Heath?—Yes.

(*Mr. Freeman.*) Putney Heath, my Lord, is inside the boundary.

(*Mr. Pope.*) Within the county of London?

(*Mr. Freeman.*) Yes.

17,215. (*Chairman.*) Yes. I see now it is. (*To Witness.*) Now let us pass to the south of the Thames. There we have got three companies, the Southwark and Vauxhall, the Lambeth, and the Kent Companies?—Yes.

17,216. Their sources of supply, I presume, are mostly outside the county of London?—Mostly.

17,217. Where are their reservoirs—you had better take them one by one—take the Southwark and Vauxhall first?—The service reservoirs of the Southwark and Vauxhall are at Nunhead and Forest Hill, and those are within the county of London.

17,218. Then the difficulties you have been mentioning in the other cases do not arise there?—No, they do not arise to the same extent.

17,219. Is there in existence any system of mains by which water could be supplied from those reservoirs in bulk to the county of Surrey?—No, because the mains that at present pass through the county of Surrey are used as supply mains both inside and out, and they would have to be cut off and re-connected in order to make them useful for supplying in Surrey.

17,220. Where is the well at Streatham; is that in the county of London, or outside?—The well at Streatham is within the county of London.

17,221. That supplies—how much?—About 2 million gallons a day.

17,222. And, on the other hand, from the Thames at Hampton the Southwark and Vauxhall get something like 28 million gallons, do they not?—They do; they have powers to take now 45 million gallons.

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Mr. R. E. Middleton. 17,223. But that is including the Staines Reservoir? --No, that is their own powers; they have 45 millions by the Act of this year.

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17,224. Their pumping stations are at Battersea and Wandsworth, are they not?—They have a pumping station at Battersea and Wandsworth.

17,225. That is for pumping filtered water?—Yes. They have large filtering beds at Battersea, from which they pump.

17,226. What part of their district do those pumping stations, with that filtered water, supply?—The Battersea one supplies the central area, and the Wandsworth pumps back, I think, for the most part, to Richmond.

17,227. Then those are already in working order, so to speak, for supplying districts outside the county of London?—As regards Wandsworth, yes; as regards Battersea, I should say scarcely.

17,228. What is the length of boundary in the district of the Southwark and Vauxhall?—About three miles and a half.

17,229. Now, take the Lambeth?—Their supply is brought from Ditton to Brixton, and crosses the boundary of the county of London at Merton.

17,230. Where are their service reservoirs?—Their service reservoirs are at Brixton, Streatham Hill, and Rockhill, within the county of London. They have service reservoirs outside; they have got service reservoirs at Selhurst and at Norwood.

17,231. Do those service reservoirs supply parts of the district that are outside the county of London, or parts of the district inside the county of London?—Both, I think. They are filled by means of pumping mains, which supply partly inside and partly outside. The pumping mains are mains of supply as well as pumping mains, and you cannot cut them off to supply only inside, because then they would not serve their purpose; they would have to be connected up to new service reservoirs if that were the case, and parts of them supply inside and parts outside. Then those service reservoirs that are outside supply partly inside and partly outside as well.

17,232. So that there, again, I suppose, in your view, in order to enable a supply in bulk to be given to the outside county, the system would have to be remodelled to a certain extent?—I think it would have to be remodelled to a considerable extent. If I may be allowed to say so, one of the largest parts of the remodelling would be the re-connexion to the houses. In many cases the same main which supplies inside might be continued to supply inside, but a new main would have to be made to supply outside, and new connexions would have to be made to the several houses in order to couple up with that new main.

17,233. What is the length of the boundary of the county of London comprised in the Lambeth district?—About 14½ miles.

17,234. Are there many streets which cross that boundary?—About 70 streets, and some of those have two or more mains laid in them.

17,235. Mains belonging to the Lambeth Company?—Yes.

17,236. Now take the Kent Company?—That company's supplies are entirely drawn from wells, and their largest pumping station is at Deptford, which is within the county. They have others at Plumstead, Shortlands, Crayford, Farnborough, and Wilmington, Plumstead being within the county of London, and the rest of those pumping stations being within the county of Kent.

(*Mr. Freeman.*) Before the witness leaves Lambeth, might I point out that he has omitted the Coombe reservoir, which supplies Surrey. It makes it complete, my Lord; that is why I venture to interrupt.

17,237. (*Chairman.*) You have omitted that, I think?—Yes, I have omitted that.

17,238. It is outside the county of London, is it not?—It is outside the county of London.

17,239. (*Mr. Freeman.*) And supplies all that part of Surrey?—It supplies the Surbiton district.

17,240. (*Chairman.*) From there, part at least of the supply in bulk to the county of Surrey might proceed?—Yes, that is so, but it is only a very small part of the county which can be taken in from there, unless a new

system of mains were laid for the purpose. That reservoir, I think, is supplied at present by two 12-inch mains.

17,241. Now, will you continue what you were saying about Kent; you have mentioned the places where the pumping stations are, and you have said Deptford is in the county of London and Plumstead is in the county of London?—Yes; the rest—Shortlands, Crayford, Farnborough, and Wilmington—are all in the county of Kent.

17,242. How are the service reservoirs divided?—The service reservoirs within the county are: New Cross, Deptford, Woolwich Common, Plumstead Common, Greenwich Park, Shooters Hill, and Eltham, with a capacity of 10,525,000 gallons, or about 77 per cent. of the total service reservoirs storage of the Kent Company; while in the county of Kent there are reservoirs at Chislehurst, Farnborough, Dartford, West Wickham, Knockholt, and Westerham, totalling about 3,098,000 gallons.

17,243. So the supply in bulk would be more easy?—It would be more easy.

17,244. What is the length of the boundary of the county of London which adjoins the Kent district?—About 14½ miles.

17,245. How many road crossings?—There are about 30 road crossings.

17,246. That is places where?—Metering would probably have to take place.

17,247. Where mains cross a road?—Where they cross the boundary of the county of London.

17,248. Have you anything to add upon this subject of the difficulties of the county of London supplying the outside counties in bulk?—I might say, with regard to the Kent Company, that a great many of those wells are at present supplying from outside inwards, and, therefore, these mains, though they might probably be more easily adapted for supplying the outside authorities than some of the others, are still at present not adapted for that purpose. The Chislehurst Well, for instance, the Orpington Well, supplies, I think, almost entirely inside London—to a very large extent, at any rate; and some of the other wells supply towards London, not away from it.

17,249. Have you got in your mind anything like an estimate of the expense of remodelling these different systems so as to enable the county of London, if it were the purchaser of the whole, to supply the outside counties in bulk?—No, I have not taken out that sum, because it would mean an enormous amount of investigation which I am not in a position to make. The companies themselves are the only people who can know exactly how their mains run, and I could not undertake to say, even in a very rough manner, what the cost would be, but it would be a very large one.

17,250. Very large?—The cost of remodelling those mains would be a very considerable one.

17,251. You cannot even give us an idea of a minimum figure?—No, I do not think I could commit myself to anything on the subject.

17,252. I do not know whether you are speaking of hundreds, or thousands, or millions?—It is more likely to be approaching towards millions—towards a million—at any rate, several hundred thousand.

17,253. (*Major-General Scott.*) Would it be possible for the companies to put in collectively some statement of the cost, similar to what they have done with regard to the inter-connexion schemes?—I have no doubt they could do so.

17,254. Without very much investigation?—It would, naturally, mean a very considerable investigation of all the mains. I have no doubt they could do it, but I do not think it would be without considerable trouble.

17,255. Are you acquainted with the system of supply in bulk in some of the northern cities where that arrangement is carried out?—No; I have seen them in many cases, but I could not say that I was intimately acquainted with it.

17,256. Could you say what features particularly differentiate their arrangements from what would be necessary in London?—I do not think there is anything that differentiates the one from the other, except the fact that the London ones have been laid without any consideration of the future or of any arbitrary boundary like the county boundary between London

and the outside, where the mains cross and recross in all directions, and where it would be necessary either to put in a very large number of meters, or to remodel the system of mains in order to meet that. The northern towns have, for the most part, been more or less modelled so as to supply directly outside through one main, or a few mains, at any rate—not through a large number of them.

17,257. Their systems, in fact, have been laid out with that object?—More or less for that object.

17,258. (*Chairman.*) But the expense of putting the meter to a main is surely not very formidable, is it?—Not putting one meter, but if you had hundreds of those meters all over London, it would be necessary to enlarge the mains in many cases, in order to have the meters, because meters mean obstruction in mains, for one thing. Then they mean the reading, examination, and correction of such meters. They increase the liability to error very largely, and I do not think that any engineer would like to have such a very large number of meters on his system, for the supplying of outside people who were to pay for their supplies by meter.

17,259. (*Major-General Scott.*) Can you say what is the largest amount of water that has been measured by the ordinary kind of meters?—I do not think any meters have been put in above a 20-inch pipe, as far as I know. A 20-inch pipe would mean, under the conditions here, about five million gallons. But, of course, very much larger meters have been used in America up to a 4-foot pipe; but those are Venturi meters, and it is doubtful if they would be very correct under the conditions existing in London, where so much of the work is done by pumping.

17,260. (*Chairman.*) Then the result, if I have followed you right, is that in your opinion this supply in bulk by the county of London purchasing the whole, and giving to the outside counties their present supplies with a margin, would be practicable, but inconvenient and expensive?—That is so.

17,261. Then there is another system which has been discussed before us, namely, the severing, not only of the systems of distribution, but of the sources of supply between London and the outside counties?—Yes.

17,262. Have you considered that question?—I have considered that question as regards the severance between the county of London and the county of Surrey; and I have prepared a diagram showing the works which the London County Council propose to sell to the county of Surrey (*handing in diagram*).

17,263. You have limited your enquiry to that, have you?—Pretty nearly to that. It was a typical case, and I thought it was sufficient to go into that one.

17,264. Then let us take that case of severance between London and Surrey?—The proposal, as I understand it, is that the county of Surrey should receive from the county of London, their present supply plus a small addition.

17,265. Twenty per cent., I think?—Twenty per cent. I think it was—making a total of 8 million gallons a day; and that after that supply had been given by the county, they were not to look for any more water from the same source. That, to begin with, seems to me to make the whole idea impracticable, because the source of supply is in the county of Surrey, and either the county of Surrey should have the means of supplying itself, or it should expect to get the whole of its supply from the county of London and not be limited to 8 million gallons a day.

17,266. But the county of Surrey expressed the opinion, I think, before us that they had abundant water under their feet, or at their sides, which would supply all their present and future wants?—That, of course, is a matter which depends entirely upon how rapidly they grow. They have a certain amount of water in their wells, undoubtedly.

17,267. What difficulty would there be in giving over to the county of Surrey such sources of supply as would yield that quantity of eight million gallons a day?—The difficulties are rather in dividing it than in giving it. If they could hand over the works of one company to the county of Surrey altogether and let them deal with them as they pleased, the matter would not be mixed up with so much difficulty as it is under the conditions laid down, as I understand them. The idea, apparently, is to take part of the subsiding reservoir capacity of the Lambeth Company, and to

hand over that, along with a certain amount of pumping power, for filling these subsiding reservoirs from the Thames, to Surrey. The subsiding reservoirs were two in number, with a combined capacity of 125 million gallons.

17,268. Belonging to?—To the Lambeth Company; and they have also four engines of 190 horse-power collectively, for pumping water from the Thames.

17,269. Into these subsiding reservoirs?—Yes. There are also two mains leading from the subsiding reservoirs at Molesey to Seething Wells. One is a 54-inch brick culvert, and the other is a 36-inch cast-iron pipe. It is proposed to hand over to Surrey part of the subsiding reservoirs and part of the pumping machinery, and one of the mains, leading from Molesey to Seething Wells, the other being kept by the county of London, or by the internal authority. Now, it would not, I think, be very convenient to hand over one subsiding reservoir unfenced off from another authority; to have the two together, one worked by one authority, and the other by another side by side, and practically without the possibility of dividing them physically.

17,270. Do these two subsiding reservoirs at Molesey communicate?—They communicate at present.

17,271. Then why do you call them two instead of one?—They are two. They can communicate, or they can be separated.

17,272. (*Major-General Scott.*) There is a division wall between them, is there not?—There is a division wall between them, and there are pipes which connect them.

17,273. (*Chairman.*) Then where is the difficulty in giving one to the county of Surrey, and the other to the County Council?—They have at present, of course, means of pumping into either. They have also means of connecting either, and the draw-off to Seething Wells, Ditton, is from either, and it would be a little difficult to separate those physically, so as to put them under the powers of another authority. But it would be more difficult still to separate the engines which are in the same house, and to hand over one set of engines, or two sets of engines to Surrey, and to keep one, or two, or three sets of engines for the inside authority; and it would be still more difficult to separate the boiler power for supplying these engines.

17,274. Would the intake be the same for both counties?—The intake would be the same.

17,275. And the draw well?—And the draw well would, I believe, be the same.

17,276. (*Major-General Scott.*) One difficulty with the engines is, is it not, that a certain division of power might be desirable to do the work in each case, and the number of engines would not admit of that particular division?—That is so; of course, you could have with four engines a stand-by of one. If you have got two engines, and they are separated into two batteries, you must have the same stand-by. You would have a stand-by of one, and the one engine would not be able to do the work. In fact, your power would be divided into two and two, instead of three and one.

17,277. (*Chairman.*) Are there any other difficulties in working the matter?—Either the 36-inch cast iron main to Seething Wells, or the 54-inch brick culvert would have to be handed over to the county of Surrey, in which case there would be only one main. At present they have a stand-by main. The one acts as a stand-by. The county, or the inside authority, would be left without a stand-by main, and so would Surrey.

17,278. Then how could that be obviated?—Practically, it would mean the laying of two new mains, because if they laid one, it would be only a stand-by for one of them.

17,279. Then how would the filtering power be divided?—The filter beds are even more closely side by side than the subsiding reservoirs, and it would be still more difficult to separate those. Then again, at Seething Wells there are other engine and boiler houses, and these would have to be separated again in the same manner as at Molesey, and that separation would be exceedingly inconvenient. To hand over two engines in the same engine house with a number of others to another authority, to have the workmen belonging to two authorities working under the same roof, and more especially to divide the boiler power and the boiler connexions, and to have the firemen working under the same roof belonging to two different authorities, would be very difficult indeed—very inconvenient, at any rate.

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Mr. R. E. Middleton. 17,280. Would there be any difficulty in dividing the filters?—No physical difficulty, but there would be the difficulty that they are all approximating to one another, and you could not very well fence one off from the other and, therefore, that the workmen belonging to the one authority would be working alongside those belonging to another authority, and they might not agree very well.

17,281. Would each county have separate filters if they were divided, or would they have to use the same filter conjointly?—I presume they would have separate filters.

17,282. Would either county have to use the filters of the other county?—I would presume they would arrange that they should not do so.

17,283. Not even at Seething Wells, for instance?—Seething Wells is the filtering station. There is no other belonging to this particular company—the Lambeth Company.

17,284. Do you then say there is a possibility of fencing off one set of filters from the other?—No, I think there is no possibility of fencing them off. It would be exceedingly difficult, because the distance between the filters is very narrow. You might do it in the case of the subsiding reservoirs, although it would be difficult there; but in the case of the filters, I do not think it would be possible.

17,285. (*Major-General Scott.*) The separation is simply a wall which gives you breadth enough to walk along, is it not?—That is all.

After a short adjournment.

17,286. (*Chairman.*) We will continue the discussion as to the severance of the sources of supply, and the means of distribution between the counties of London and Surrey. I think we have got as far as Seething Wells, have not we?—Yes.

17,287. To the filter beds there?—To the filter beds.

17,288. What would happen to the water after Seething Wells?—That would have to be pumped from there by engines belonging at present to the Lambeth Company to, first of all, the Coombe reservoir through two existing 12-inch mains, and this Coombe reservoir would thence supply the Kingston district of Surrey.

17,289. The Coombe reservoir being outside the county of London?—Yes.

17,290. Would that alone suffice for the supply of the county of Surrey?—No. A further supply would have to be taken from Seething Wells to Brixton.

17,291. That would have to be done by the county of London, would it?—That would have to be done by the county of London. It would be taken from Seething Wells to Brixton, and Brixton is inside the county of London, and the mains belonging to it are part of the supply mains to the county of London. There are three 30-inch mains, and one of those would have to be taken up for this purpose.

17,292. You have got some of the water taken to Coombe and some of the water to Brixton?—Some of the water would be taken on to Brixton.

17,293. Then when you get to Brixton, is that in the county of Surrey?—Brixton is in the county of London.

17,294. Still?—Still.

17,295. How would you get it on?—From there it has to be pumped again (with further machinery, which would be in the same engine house with the machinery belonging to the county of London, or to the other authority, the inside authority) to a reservoir situated at Norwood, through mains of 24 and 21 inches in diameter, which are at present used both for supply and for pumping, and which would, therefore, have to be duplicated so far as they were used for supply and for pumping, that is to say, for a distance of about 2½ miles.

17,296. Those operations would have to be performed by the county of Surrey in case of severance?—Under those circumstances, of course, they would have to bear a very heavy burden—a cost which they, I think, might get rid of, which they need not bear, if they were to do it themselves. Certainly it would have to be borne by Surrey.

17,297. If they are to have the sources of supply as well as of distribution, they must perform all those operations of pumping from Seething Wells to Combe,

and from Seething Wells to Brixton?—That is certainly so.

17,298. Then let us go on, please?—But they would have to do that with engines, which at present are in the same building with those of another authority, and it would be exceedingly inconvenient to do so. Then the 30-inch main would be taken up for the purpose of pumping.

17,299. What 30-inch main? I have not heard of that 30-inch main?—I have said there are three 30-inch mains used from Seething Wells to Brixton. One of those would have to be taken up for this supply, and it is far larger than is necessary for the purpose.

17,300. There is no great harm in that, is there?—Except, I presume, that the Surrey County Council would have to pay an additional price for what they did not require, and which was of no use to them.

17,301. We have got to Brixton. What then?—From Brixton, again, you have to take up some of the engine power used at Brixton, and which would belong initially to the inside authority; and there would be in the same building with that authority part also of that storage reservoir at Brixton.

17,302. Then, in Brixton, we are still in the county of London?—In Brixton we are still in the county of London. From there you have to take other engine power, and part of that reservoir existing at Brixton, and from that to pump to a service reservoir at Norwood, through two mains, 24 and 21 inches in diameter respectively, which are used partly for supply and partly for pumping at present.

17,303. Just let me stop there an instant; so that you would have the county of Surrey pumping the water that is allotted to it by the county of London from Seething Wells into the county of London?—Into the county of London.

17,304. And then out again?—And then out again, and on the way, under present circumstances, giving supplies to part of the county of London. They are taken off the same main.

17,305. On the way giving supplies to part of the county of London?—That is the present arrangement. That would have to be altered, and another main would have to be laid to replace it, and it seems scarcely fair, I think, that the Surrey County Council should have to replace that main which would be used for the inside supplies.

17,306. Now we have got as far as Norwood. What then?—Then it is delivered to that district in Surrey from the Norwood Reservoir.

17,307. But the whole supply that the county of Surrey would get under the scheme of severance would follow the route that you have just indicated?—No, not the whole. There is a further supply besides that. There is also the 12-inch main from Norwood to Wimbledon, passing through Lower Tooting.

17,308. But that is coming from Seething Wells?—Yes; that has to be connected up to the 12-inch main from Wandsworth to Wimbledon.

17,309. What has Wandsworth got to do with it? I thought we had got all our supplies from Seething Wells to Brixton, and Brixton to Norwood?—So we have; but we begin to take supplies from the Southwark and Vauxhall Company as well; and for that purpose this connexion between the 12-inch main from Norwood and the 12-inch main from Wandsworth to Wimbledon is part of the arrangement.

17,310. If there is a fresh supply, begin at the beginning, please?—The fresh supply begins at Hampton from the 30-inch main of the Southwark and Vauxhall Company, which pumps from there to Wandsworth; from Wandsworth it is repumped through the 12-inch main to Wimbledon, and the connexion there would serve for an alternative from Norwood or from Wimbledon.

17,311. Do you mean that the only delivering points, so to speak of supply that the county of Surrey would get would be at Wimbledon and at Norwood?—Except between the boundary—from where it passes the boundary of the county of London, a little below Lower Tooting, and where it passes a little below Wandsworth. The piece outside that is entirely Surrey.

17,312. Entirely what?—It would entirely belong to, and would serve for the supply of, the county of Surrey.

See 19,8
—38.

See 19,884
—91.

17,313. But would those three points—namely, Norwood, Wimbledon, and below Lower Tooting—suffice to supply all the part of Surrey which the water companies at present supply?—Very nearly, I think.

17,314. Are these all the supplies that would be necessary for the county of Surrey?—Those are all the supplies that would be necessary; but in order to obtain that supply for Wimbledon from Wandsworth, nine miles of the 30-inch main, which at present supplies within the county of London, would have to be taken up, and would become useless for the county of London, and would have to be devoted to the county of Surrey, and a new main would have to be laid instead of it.

17,315. How would the district between Croydon, Beckenham, and Sydenham be supplied?—Most of Croydon is supplied by Croydon itself. The rest of Croydon is supplied from Selhurst.

17,316. But that is a fresh source of supply?—No Selhurst is merely a connexion with Norwood.

17,317. Then from Norwood the water would have to be pumped, would it, to Selhurst, or would it go by gravitation?—From Norwood it can go by gravitation to Selhurst.

17,318. Then, in the result, what is it that the Surrey County Council would have to purchase in order to get their supply of eight million gallons?—They would have to purchase one or other of the subsiding reservoirs at Molesey, and engines at five different stations, of an aggregate horse-power of about 653, although the total horse-power they require would be about 250. They would have to purchase reservoirs at three stations.

17,319. Subsiding reservoirs, do you mean?—Subsiding reservoirs at three stations, having an aggregate capacity of about 100 million gallons; filter beds at two stations, with an area of about eight acres, though about six acres would be sufficient for the purpose; and service reservoirs at four stations, with an aggregate capacity of 14½ millions gallons.

17,320. Would that be more than their needs?—Slightly more. The difference is 2½ millions gallons. I do not think it is worth consideration.

17,321. They would necessarily, as I understand you, have to come into the county of London?—They would have to come into the county of London.

17,322. Are those service reservoirs at Wandsworth and Brixton?—There is a very small service reservoir at Wandsworth, and there is a large one at Brixton.

17,323. They would have to come into the county of London for those two service reservoirs, in the event of severance?—For these two reservoirs.

17,324. They, of course, would have to purchase mains?—They would have to purchase mains very much larger than at all required.

17,325. What quantity of main?—Outside the county of London a 36-inch main for 3½ miles; a 30-inch main outside the county for 13 miles; a 12-inch main for 17 miles—33½ miles of main outside the county; and within the county 6 miles of 30-inch main, 1 mile of 24-inch, 1 mile of 21-inch, 1 mile of 18-inch, and 9 miles of 12-inch mains—18 miles in all, or a total of 51½ miles.

17,326. You do not include the smaller mains, I see?—That does not include the mains of smaller size than 12 inches.

17,327. Would all those miles of mains within the county of London have to be duplicated by somebody?—I think, in almost every case, they would have to be duplicated by somebody.

17,328. What is the extent of the district for which that amount of works would have to be purchased?—It is a narrow strip of district, about 15 miles in length.

17,329. Would there not be any easier or less elaborate way of effecting the severance than that?—In effecting severance I should have said it was much easier to lay a new main for the supply of the district, with the exception of the mains to Combe. Those are useful, and there is no objection to those; but the other mains are unnecessarily lengthy, and unnecessarily large.

17,330. Then, what would you have to do if you dispensed with this roundabout route from Seething Wells to Brixton, and from there to Wandsworth, and from there to Norwood. How would you do it otherwise?—By laying a main a little south of Combe, running

round the boundary to Norwood, taking up the district in that way, and connecting with the Wimbledon main direct.

17,331. How would the supplies get into that main?—I should presume that it would be preferable for the county to have a new source of supply from the Thames altogether—to put up either that, or to purchase one of the works of the companies out and out—one of the intakes of the companies out and out complete.

17,332. One of the intakes, do you mean, at Seething Wells?—No, not at Seething Wells; at Molesey.

17,333. Is there any engineering difficulty about that?—There is no engineering difficulty whatever that I can see.

17,334. Then why should we have gone all through the elaborate details of the difficulties of that other scheme, if severance might be effected in the way you have just indicated?—Simply because it has been put forward as a scheme. It is what was put forward by the engineer to the London County Council as being a scheme—I cannot say that he thought it a good one, but he put it forward as one.

17,335. Then in the result it comes to this, that you think there is a mode by which a severance might be effected?—Total severance?

17,336. Total severance both of supply and distribution?—Yes, by giving up an intake entirely.

17,337. And could London afford to give up the whole of the Molesey intake?—Unless it got additional supply from elsewhere, it could not.

17,338. What number of million gallons a day will the Molesey intake draw from the Thames?—There are two intakes at Molesey, and one is entitled to draw 22 million gallons, and the other 24½ million gallons.

17,339. Eight million is what the Surrey supply would be?—Yes.

17,340. Then how could they take over one of these intakes altogether?—They could not take it over unless the water was transferred to another pumping station to be transferred forwards. For instance, if the Chelsea were given up to Surrey, the mains might be laid from the other station at Molesey—that is the Lambeth—to the Putney Heath, and delivered on from there.

17,341. But then, that would be a pumping station that could pump 22½ million gallons?—No, my Lord, the pumping station at present, is only pumping about 14 million. Fourteen million is the supply of the Chelsea at present.

17,342. The Chelsea have got a pumping station at Molesey, as well as the Lambeth?—As well as the Lambeth.

17,343. Fourteen is not eight, you know?—No. It is, of course, in excess of the requirements, but we should suppose that, in a very short time, Surrey would want more than eight.

17,344. (Major-General Scott.) If the Chelsea were handed over to the Surrey County Council, what arrangement would be made for the Chelsea district?—They would have to be supplied by engine power alongside the Lambeth. You would have to put entirely new engine power for this arrangement.

17,345. It would simply involve another re-arrangement for the supply of Chelsea, and new works, so far as was necessary?—For Surrey?

17,346. Yes?—For Surrey, certainly.

17,347. For the Chelsea?—Only so far. The pumping machinery is there already. Their pumping machinery would go on being used. It would simply be that they would have to have extra subsiding reservoirs for their purpose.

17,348. (Chairman.) Would not they require new subsiding reservoirs and new filtering beds?—I presume Surrey would supply the new filtering beds.

17,349. Surrey would have to do it?—Certainly, they would have to do it. Under any circumstances, somebody must supply new filter beds, because the Lambeth cannot afford those, and still give the same supply as they are giving in London.

17,350. We have been discussing, at great length, a system by which the filter beds were to be divided with the inconveniences you have pointed out; namely, insufficient separation between the filter beds belonging to the two counties, and so on?—Yes.

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Mr. R. E. Middleton. 17,351. But in the alternative you have now suggested, new filter beds would have to be made by Surrey?—If Lambeth is to continue to give the same quantity of water, Lambeth would.—

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17,352. No, Lambeth would give eight million gallons less. That is eight million gallons handed over to Surrey?—Then, how is Lambeth going to supply the increase in its district? I do not understand how it would supply the increase in its district in the future. It is already supplying more than its quota.

17,353. From Wales or from anywhere?—Then, that is the same thing as changing the Chelsea. It is only handing it from one to the other. It is merely a re-arrangement of supply.

17,354. (*Major-General Scott.*) Do you consider severance of this sort a good thing in point of economy?—I do not—certainly not. I think that the increase of authorities, the increase of management, the handing it over and dividing it up into small slips, would increase the cost of works very largely indeed—the cost of management, and maintenance, and everything—in fact, for the supply outside.

17,355. (*Chairman.*) Outside difficulties, of course, you are not familiar with; you would have to constitute the county council of Surrey, a water authority for part of the county?—That is so.

17,356. And not for the rest of the county?—That is so.

17,357. (*Major-General Scott.*) Assuming that the whole water supply of the water area of London had originally been arranged as one unit, would not there have been an enormous saving in expenditure? Supposing that all the considerations of supply were in the form of dealing with the whole water area as one unit; could not it have been done more economically than it has been done by eight separate companies?—I think that is so, I should say certainly that is so, that it would have been done more economically if it had been done by one authority all over, but that it should be done now, I do not. I do not believe it would be done more economically now.

17,358. That is another matter; but here you are now describing a method of increasing the evils which have resulted from the division of that water area of London into eight. You are dealing with a method of perpetuating that, or rather of increasing that by making further severance?—I beg your pardon. I think you have entirely misunderstood my contention. I am opposed entirely to the severance from the first to last.

17,359. I understand. You are only describing a scheme?—I say I am only comparing the two schemes, and saying that the other would be cheaper for Surrey. I do not say it is desirable at all—I do not think so.

17,360. (*Chairman.*) Which would be cheaper for Surrey?—To have a supply of their own and put it into their own mains and lay their own mains.

17,361. (*Major-General Scott.*) I quite understand you. I have not said you were advocating a scheme. I have said you are describing a scheme?—Quite so. I do not think it is a good one; I do not advocate it in the slightest degree. I think it is undesirable in every way that there should be this division of authorities at all.

17,362. (*Chairman.*) You say that if Surrey is to supply itself with water, it had better leave the whole of the water companies to the county of London, and supply its own water independently?—Yes, that is my belief.

17,363. (*Major-General Scott.*) Now, assuming that an authority such as the London County Council took possession of the undertakings, and split them up in this sort of way, do you think there would be still further complications with all those suburban companies which are now independent?—I feel sure that there would be very serious complications in connexion with them.

17,364. Would all sorts of questions arise about the division of the supply of water which is available?—Undoubtedly. I should say that those, as a matter of fact, had arisen already in some cases—that some of the smaller areas have found it very difficult to supply their districts as it is, and that they desire to have more of the water which at present goes to the water companies, but it would not pay them to go a distance to get it.

17,365. So that with regard to the difficulties with those, I believe there are something like 20 small companies, are there not, existing within Water London?—I do not think it is as many as that within Water London, but it is within a very short distance of London.

17,366. (*Chairman.*) There are some overlapping in Kent?—Yes.

17,367. (*Major-General Scott.*) Within Water London and Greater London?—Yes; I should think there are within Greater London and Water London.

17,368. That severance which is proposed, would of course, accentuate all those difficulties?—Certainly.

17,369. There would be a mass of conflicting interests with a limited supply?—Yes, with a very limited supply in some cases.

17,370. (*Mr. Lewis.*) Do not you think that if each county were made its own water authority, all those small companies would disappear?—No. I do not think that a county being a water authority is a desirable thing. Some counties have water and some have none. I think that a watershed authority is much more to the point than a county authority.

17,371. A watershed authority; that is, you mean, all the district which is in the same watershed?—All the districts in the same watershed should be amalgamated into one water and sanitary authority.

17,372. That would include, would it not, the whole of the counties bordering the Thames up to Wales?—Up to Gloucestershire, yes.

17,373. It would be a gigantic affair?—Nevertheless, I think it will come some day, my Lord.

(*Mr. Balfour Browne.*) It would be a large order.

17,374. (*Major-General Scott.*) You think that the interests of each watershed should be controlled by a single authority?—By a single authority.

17,375. (*Mr. Lewis.*) Suppose you take the county of Kent; is not there sufficient water there to supply the whole of Kent—all the future requirements of Kent—and do not you think that the opposition to the sinking of additional wells would disappear if Kent were its own water authority?—I doubt it very much. There is a very large amount of water in Kent; but a good deal of it is very much scattered, and I think those same conflicting interests would still arise, because the district round London would want water from other parts of Kent where it was not so much wanted, and the other parts, though they did not want the whole of the water, would say, "This is our water and we want to keep it for ourselves."

17,376. (*Major-General Scott.*) Is it not pretty well established now that it would be very difficult to get Parliament to agree to the sinking of additional wells, say, in Kent and Hertfordshire for the purpose of supplying London?—I do not think Parliament can have heard all the arguments on the subject, or I should say it was not a foregone conclusion. I think there is no objection to the sinking of further wells.

17,377. (*Mr. Lewis.*) You think it is possible Parliament might sanction it?—I think so.

17,378. (*Major-General Scott.*) There has been some idea that Kent stood in a specially favourable position for severance; do you think that there is any probability that it might be found desirable in the future to transfer water from Kent to the East London across the river?—In any large quantity, I think not; I think that Kent will want most of its supply itself. If you went to the west, down to the Medway district for water, then yes, but that is not within the Kent district. If you sink wells in the Medway district for water for London, it might be very desirable that that water should be distributed on the north side of the Thames.

17,379. I included that in my question?—Then certainly it might be.

(*Mr. Balfour Browne.*) Within the county of Kent.

(*Major-General Scott.*) Within the county of Kent, I mean.

(*Witness.*) Within the county I think it is very likely it might be desirable.

17,380. Then, in that case, the question of severance would become rather complicated?—It would become very complicated indeed.

17,381. (*Chairman.*) Of course, if there is severance, you never could get any help from one county to

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another?—That is so. I quite understand, and that is one very strong objection to severance.

17,382. You yourself have calculated upon getting 123 million gallons a day extra from wells in Kent beyond what is got now?—Yes, that is so.

(*Mr. Balfour Browne.*) Local authorities, under the Public Health Act, have a right to supply other local authorities in bulk.

(*Chairman.*) Yes, but they have a right to refuse to supply.

(*Mr. Balfour Browne.*) Yes.

(*Chairman.*) And Kent and Hertfordshire have not shown any disposition to be generous to their neighbours, as far as I can see.

(*Mr. Balfour Browne.*) I leave you to settle that, my Lord.

(*Lord Robert Cecil.*) Be just before you are generous.

17,383. (*Chairman to Witness.*) Have you considered the proposal to sever the counties of London and Middlesex, both as to supply and as to distribution?—Yes.

17,384. Will you tell us your views upon that?—The idea is that the authorised works of the New River Company—those are the ones to be constructed in connexion with the Staines reservoirs, and situated near Kempton Park, including two subsiding reservoirs, to contain 219 million gallons, 12 filter beds for a daily supply of 11½ million gallons or more, and pumping machinery, and a main to supply at least the same quantity of water to a service reservoir at Cricklewood, placed at a level 110 feet above Kempton Park, and another service reservoir at Fortis Green, placed about 260 feet above the works at Kempton Park—should be used for the supply of Middlesex.

17,385. I have not yet got the source of supply?—The source of supply is from the Staines Reservoirs, which would be, if the works were purchased by the London County Council, their property. The county of Middlesex would have to take their supply from the Staines conduit, which would at the same time be the property of the London County Council, and they would, therefore, have to take it in bulk, without having power to increase their supply.

17,386. That is not the supposition I wanted to discuss. The county of Middlesex claim to have sources of supply of their own?—Yes, my Lord.

17,387. As well as their means of distribution?—This is the supply that was suggested; and I say that it is an impossible one on the severance, because they must obtain it in bulk to begin with unless new works are constructed altogether from Bell Weir to Kempton Park. It must be brought down in the aqueduct at present being constructed for the Staines Reservoir; and, therefore, it could only be delivered to the other company in bulk.

17,388. Is there no other means of giving the county of Middlesex a source of supply which should belong to itself except going to the Staines Reservoir?—Unless they pumped direct from the Thames near Kempton Park, which, of course, would mean a new intake, and would be a new source of supply altogether.

17,389. Kempton Park belongs to which company?—To the New River Company.

17,390. As long as they do not exceed the statutory quantity from the Thames, the New River Company, I suppose, could divide their intake into two parts instead of having it in one?—Under those circumstances, of course, it would mean the abandoning for all practical purposes of so much of the use of the Staines Reservoir as was at present allotted to the New River Company.

17,391. No, no.

(*Mr. Pember.*) A general waste of distributing plant?

(*Chairman.*) Why so?

(*Witness.*) Because we have only power to take so much water from the river. If a third of that is to go to Middlesex, we should be obliged to take a third less, or the then authority would be obliged to take a third less.

17,392. The New River Company has now, you say, an intake at Kempton Park?—No, my Lord, they have no intake at Kempton Park. These are works proposed to be constructed in connexion with the Staines Reservoirs, and their intake will be from the conduit of the Staines Reservoirs.

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17,393. But there is an intake somewhere on the Thames that should be handed over?—That is the East London.

17,394. Just hear my question before you answer it. There must be an intake somewhere on the Thames that should be handed over to Middlesex?—No, my Lord, there is none at present. The proposal is that it should be part of the Staines Scheme, and the water would have to be brought down in a common conduit from Bell Weir.

17,395. That is a supply in bulk, and not a control of the sources of supply?—No.

(*Mr. Pember.*) Is it not a fact, Mr. Middleton, that the greater part of that intake at Kempton Park belongs to the Grand Junction?

(*Mr. Pope.*) There is no intake there.

(*Witness.*) There is no intake at Kempton Park whatever.

17,396. (*Mr. Pember.*) Reservoirs?—No, not the reservoirs at Kempton Park. The reservoir at Kempton Park that I am referring to is the new one to be built entirely by the New River Company.

17,397. (*Mr. Pope.*) To utilise their quantity of Staines water?—To utilise their quantity of Staines water. It is entirely to be built and the whole main is to be laid in connexion with the Staines reservoir.

17,398. The conduit is not made at present. That is from Fortis Green?—The pipe is not laid at present. That is the main.

17,399. That is the pipe from which Middlesex would be supplied?—That is the pipe from which it is proposed they should be supplied.

(*Mr. Pember.*) The New River have no intake from the Thames except what they take by the Staines reservoir.

17,400. (*Chairman.*) Surely there are plenty of intakes on the Thames, part of which I should have thought might be allotted to Middlesex?—Then it must be brought from somebody else's works—not from the New River.

17,401. I thought you said it must be from the New River?—I did not say it must be the New River. This is a scheme that has been put forward, and I say, under the circumstances, this scheme would not work except as a supply in bulk.

17,402. I want to put that aside, and to know why some intake could not be allotted to Middlesex where they could get their water themselves from the Thames?—It would mean, I think, the abandoning of other mains and supplies which are at present in full use, and would only be waste of money in another direction.

17,403. (*Mr. Pember.*) And a waste of distributing plant?—A waste of distributing power, in fact.

17,404. (*Mr. De Bock Porter.*) Do you mean that the water which the New River Company are going to take from the Staines Reservoir is really wanted for their own district?—For their own district.

17,405. And is not available for supplying the outlying portions of Middlesex?—It is not available for that purpose. Not only that, but if either one of the intakes that are situated near Kempton Park were taken for the purpose, all that water is at present required for the district which is being supplied, and there is none available for Middlesex.

17,406. Could not Middlesex be more easily supplied from Hertfordshire—the northern part?—I do not think there is much advantage in supplying from Hertfordshire. There is a good deal of pumping to be done. There is a considerable range of hills between.

17,407. (*Chairman.*) Can you give me the quantity of water that Middlesex gets now from the companies—I forget which they are. If you cannot, I will not trouble you?—The population included in the waterworks area is 458,444.

17,408. If you have not got the figure, I will not trouble you; but is it more or less than Surrey?—Oh, very much larger than Surrey. There are nearly 500,000 persons.

(*Mr. Pember.*) It looks like 17½ millions—35 gallons a day for 500,000 people.

17,409. You say there are no means of giving Middlesex any intake of their own on the Thames without wasting pumping power and distributing power

Mr. R. E. Middleton that is now used for other purposes?—Elsewhere, that I believe to be the case.

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(*Chairman.*) Then we will content ourselves with Surrey and Middlesex.

17,411. (*Chairman.*) I think we have the figures somewhere. I do not carry it in my memory, that is all. None of these Thames intakes are for less than 22 million gallons?—Only one for 22—that is the Chelsea Company—and the rest are all 24½, except the East London. The East London is only 10. But then that is taken right across London into their own district; 10 millions they take.

17,412. I suppose you could make that available for Middlesex?—Then that would only make 10 out of 17 millions.

17,413. Could not you pump 14?—You could pump 14, but then who is going to give the water? It means an additional supply from the Thames.

17,414. If they are all in one hand, it only means that the other stations are pumping a little less?—Yes.

17,415. (*Mr. Pember.*) The mains of the East London would have to be altered?—The mains would have to be altered any way, because this one 36-inch main would not be large enough.

17,416. (*Chairman.*) If you set your mind to facilitate severance, instead of setting your mind to find out objections, could it not be done in that sort of way?—It could be done in that sort of way, but not very easily.

17,417. (*Mr. Pember.*) It would involve expense?—I would involve expense, certainly.

(*Chairman.*) I suppose so.

17,418. (*Mr. Pember.*) The main of the East London, I think, is only capable of taking 10 millions?—It has to be very hardly pressed to take 10.

(*Chairman.*) Very well.

17,419. (*Mr. De Bock Porter.*) May I ask you a question with reference to the Staines Reservoir? Has the land been acquired for the whole of the scheme, or only for the part that is in course of construction at the present time?—Only for the part that is in course of construction at the present time.

17,420. How many acres?—About 620, without the land for the aqueduct.

17,421. 620 acres have been acquired?—Have been acquired without the aqueduct.

17,422. How much per acre has been paid for that land?—It runs to, I think, about 110*l.* per acre.

17,423. And how many acres more would be required to complete the Staines Scheme?—About 4,500 acres.

17,424. But is such an area obtainable at a reasonable price within the district of Staines, do you think?—Yes, certainly, there are plenty of sites—numbers of them. We scheduled to our Staines Reservoir Bill several other sites, but Parliament refused to sanction their being acquired.

17,425. If it were known that the companies were in the market, and were obliged to obtain an area of 4,500 acres, is not the price likely to be very much enhanced?—I do not think so; it might be slightly.

17,426. Has the land been acquired for the aqueduct?—The land has been acquired—most of it; almost all of it now.

17,427. That is the aqueduct that will be available when the scheme is completed as a whole?—As a whole, yes.

17,428. In the estimates which you have given us under the Staines Reservoir scheme, you have included the cost of the land, I presume?—I have included the cost of the land.

17,429. Based on your actual experience?—On actual experience, as nearly as we could get it up to the date they were made.

17,430. You have not added anything for the prospective value that is likely to be demanded?—No, I have not, because the price that has been paid is very heavy.

17,431. It is not very usual for the price of land to remain stationary when there are large requirements in the future?—We are going further away from the town rather than nearer, and I think that the price would incline to be rather less than more. There was reason for saying that some of the present land might at some future time have been building land, but I think that can scarcely be said of any of the other sites, or very few of them.

17,432. (*Chairman.*) We have discussed the financial results of purchase generally and with special reference to the possible consequence of supply in bulk or of severance?—Yes.

17,433. This scheme of going to Wales is another incident which, I suppose, may be regarded as connected with a possible scheme of purchase?—Yes.

17,434. If purchase is to be followed by bringing the water from Wales, that is a matter, of course, of very great moment?—Yes.

17,435. As I gather your opinion is against going to Wales?—My opinion is entirely against going to Wales.

17,436. In the first place, is the whole scheme of the mains of the different water companies adapted to receive a supply from the outside?—No, it is not. The mains are not adapted for that.

17,437. Why not? They do now get a supply from outside, from Hampton and Staines?—Yes, if you were to bring it in at the same place and pump it in the same manner as it is taken at present, it would be very suitable, but then all the advantage of introducing a gravitation supply would be lost. The mains radiate from the place where the pumping stations are, and they naturally have a tendency as a rule to get smaller—divided up into a number of small mains towards the end. They start from one big main and go out into a number of fingers, and to connect up those fingers would be very much more difficult than to connect to the direct main. Not only that, but you have, even in the same company's district, different areas which are at different levels, and therefore at different pressures in the mains. Thus one pumping main is pumping to a particular reservoir at a particular height; and the water is therefore in that main at a particular pressure. The next main is pumping to another reservoir at a different height, and therefore at a different pressure; and to connect up those two mains with a gravitation scheme would be difficult. You have therefore to connect into the reservoirs direct.

17,438. To connect what into the reservoirs direct?—The water in the mains coming from outside. The mains coming from Elstree would have to be connected up to the service reservoirs of the companies, and, in some cases, those service reservoirs are situated at great distances apart—some of them on the south side of the river, some of them on the north, and to connect those means a large expense.

17,439. I suppose, when we come to your tables, we shall have that expense estimated?—Yes, the expense is given.

17,440. I do not want you to give me the figure at present, but you have estimated the expense?—I have estimated the expense.

17,441. It merely means that there is connected with the supply from Wales an expense of connecting a high service reservoir wherever it is—Elstree or elsewhere—with the different service reservoirs that at present exist?—That is so.

17,442. That I can understand. You would do that by some sort of circumferential main?—I think not. As I have worked it out, it works out better in several ways with a divided main—not entirely circumferential, only partially so.

17,443. On the other hand, you do not get rid of pumping altogether, even if you do bring your supply from Wales?—No.

17,444. Is the 80 or 90 per cent. of the existing reservoir capacity north of the Thames capable of being supplied from Elstree by gravitation?—That is so as regards the service reservoirs; but I do not think it is quite true as regards the people supplied, because the service reservoir will not supply the district immediately surrounding it, which is at a lower level. The water has to be pumped even to houses quite close by, because they are higher than the reservoir itself. Also,

the pumping supply which is pumped into the reservoir under pressure will supply the houses near by it at a higher level than the gravitation supply going into the same reservoir.

17,445. What percentage of the existing service reservoirs could be efficiently supplied by gravitation?—The same number of reservoirs. I may say that the 11 per cent. which could not be supplied does not represent the population that could not be supplied. It is something larger than that. How much I could not possibly estimate. I am quite willing to take it as being only 11 per cent. for all practical purposes.

17,446. Is the existing pumping machinery of the companies intimately connected with the filtering area of the companies?—Yes.

17,447. Then, if a great part of the present pumping is saved, would you have to abandon part of the present filtering area?—All of the filtering area adapted to the quantity that was brought in from another source. If there were 121 millions brought in by gravitation, so much filtering area would have to be abandoned, and new filtering area constructed to meet that quantity.

17,448. I cannot follow that. The scheme is, you know, to keep the present supply from the Thames at 130 millions normal. 55 millions Staines Reservoir—to keep that, and to continue to supply so much as is now supplied from that source, and to bring in an additional supply from Wales. Why is a filtering area to be abandoned, when the same quantity of water will have to be filtered by the old means?—I think, my Lord, you have not quite grasped the idea.

17,449. Then make me grasp it, if you can do it?—The proposal is, as I understand it, that this quantity of power should be constructed for pumping 185½ million gallons from the Thames. In the meantime, works should be constructed in Wales for the delivery of 121 million gallons. When those works are completed, 121 million gallons would be introduced by gravitation, and 121 million gallons of the pumping would be stopped for the time being, so that the 121 million gallons brought by gravitation would replace the 121 million gallons pumped.

17,450. (Major-General Scott.) Will you explain that; is it because it is more economical?—As to that, I beg to differ, General Scott.

17,451. At all events, it was stated to be more economical?—It was stated to be more economical.

17,452. (Chairman.) I certainly have not understood that?—As the supply increases from 185 up to larger quantities, so would pumping have to be re-introduced, and the filtering area taken up again. Therefore, the filtering area at the pumping stations cannot be abandoned; it can only be abandoned temporarily, and, therefore, a new filtering area must be constructed for the filtering of 121 million gallons introduced from Wales.

(Mr. Balfour Browne.) I think Mr. Middleton is mistaken. Our proposal was that in 15 years 185 millions would be required. It would take us that time, probably, to bring the Welsh water, and at that time a supplementary supply would be required beyond the 185 millions.

(Chairman.) I so understood it.

(Mr. Balfour Browne.) That is our proposition.

(Mr. Freeman.) Of course it was.

17,452A. (Chairman.) I understood, certainly, that no part of the 185 millions that the companies can now take from the Thames was to be abandoned, but that it was to continue in use, and that the Welsh supply, when it came in, would be supplementary?—I think that could scarcely be the case, because it is stated distinctly that a very large saving would be made on the pumping, but under those circumstances there would be no saving on the pumping whatever.

(Chairman.) Yes, there would be a saving in the pumping on the fresh supply; that is, the fresh supply; instead of having to be pumped, would be delivered by gravitation, and that fresh supply would be rendered necessary by increase of population, and what not.

17,453. (Major-General Scott.) The fact is this, is it not: the 121 millions comes in in gross at the end of the 15 years, or whatever it is?—That is what I understand.

17,454. The whole 121 is there ready, but only a small portion of it would be taken into use at first?—But, if that were the case, I think that the whole 121

would not be ready, and certainly I should not make works like that myself. They would only introduce so much as would make the smaller supply; put in the syphon pipes en route and the filter beds of the service reservoirs at Elstree, say, sufficient for introducing 25 millions to go on for the time being.

17,455. How much would come in by that means?—25 million gallons, which would then be used, of course, to replace a similar quantity of pumping, and naturally stopping the pumping to the extent of 25, and you would keep it to the extent of 25.

17,456. (Mr. Mellor.) You would surely increase the 25; you would go on increasing that?—You would gradually increase it. I say keep it at 25 in advance of your supply, so that you have always got 25 to spare.

17,457. (Major-General Scott.) You think that the saving of pumping would not compensate for putting in the larger number of syphons and bringing the larger quantity of water?—Yes, that is it. The saving would not, in my opinion, compensate for the extra expense introduced so much earlier.

17,458. (Chairman.) But if my understanding of the evidence is right, and it is only contemplated to bring in water from Wales when a supplementary supply is needed over and above the present supply of 185½ million gallons, then there will be no abandoning of pumping or of filtering beds?—Oh, certainly; but as I have understood the evidence, it is not quite what your Lordship suggests.

17,459. But if I have understood it rightly so, then there is no abandoning of any pumping or of any filtering area?—There would be the abandoning of anything you introduce. They naturally would stop the pumping of the small quantity that they brought in, if they brought in a small quantity, and of a large quantity if they brought in a large quantity.

17,460. I give it up. In your view, as I understand, the Thames basin is capable of furnishing more than 300 million gallons a day?—Yes.

(Mr. Pember.) I may be wrong, but I think the witness means really a very simple matter.

(Chairman.) It is my fault, I am certain.

(Mr. Pember.) It is this. At the end of 15 years you would have got from Wales, if his method is pursued, 25 million gallons a day more than you wanted. It would then be for you to consider whether you would use that water which comes to you by gravitation, or whether you would pump up to your 185 millions, which, of course, is a matter of annual expense.

(Chairman.) I can understand Mr. Middleton's view perfectly, but he will not accept my hypothesis.

(Witness.) I am sorry, my Lord, if I have not done so.

17,461. (Chairman.) I say, supposing I have understood the evidence right and that the Welsh water is to be used only supplementarily, then there will be no abandoning either of filtering or pumping plant?—Undoubtedly that is so.

17,462. You think more than 300 million gallons a day can be got from the Thames area?—Yes.

17,463. And that, at any rate, to go up to 400 million gallons a day, which means a complete instalment of 214½ million gallons a day beyond the 185½ millions, would cost less than the Welsh Scheme?—Would cost less than the Welsh Scheme.

17,464. I asked you many months ago if you could tell me what it would cost to apply the Staines conditions fully to the existing supply of 185½ million gallons; and I understand you are not prepared to tell me that yet?—Does your Lordship mean the Staines conditions of 1893 or on the later basis?

17,465. What do you say will be the cost of bringing the 185½ million gallons, the present authorised supply from the Thames, up to Staines Reservoir conditions?—Under the condition of 1893, my Lord, the capital cost is 1,311,900*l*. That you will see in an estimate which I have prepared comparing my own and Sir Alexander Binnie's estimate of the cost of supplying 185½ million gallons per day from the Thames. (*The witness handed in Estimate I. See Appendix L, Estimate 1.*)

17,466. The 1,311,900*l*. is the capital cost of what?—Of constructing the reservoirs, aqueducts, and other works, except the pumping—the distribution.

17,467. What capacity of reservoirs?—The capacity of reservoirs was 5,339 million gallons. Deducting the

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Mr. R. E. Middleton. existing capacity of 866 leaves 4,373 million gallons of reservoirs to be constructed at 300*l.* per million gallons.

22 Nov. '98 17,468. That gives 1,311,900*l.* *P*—Yes.

17,469. (*Major-General Scott.*) How do you make up that 300*l.* per million gallons?—It is merely the estimated quantity taken from our actual estimates and then divided into the sum. The 300*l.* is merely a way of working it out. You will see the sum decreases with every increase of reservoir capacity.

17,470. (*Mr. De Bock Porter.*) This includes purchase of land?—This includes purchase of land.

17,471. And every expense connected with the formation of the reservoir?—And every expense connected with the works.

17,472. (*Mr. Pember.*) When you say you have compared it with your own estimates, what estimates do you mean?—Estimates for making reservoirs sufficient for this capacity have been worked out, along with the cost of land, the cost of the aqueduct, and the pumping machinery and the pumping mains; and that works out to 1,311,900*l.*, and, dividing that by 4,373, gives 300*l.* per million gallons.

17,473. It is a sum done from figures you have?—That is all.

17,474. (*Sir George Bruce.*) Is that on the basis of your present contracts at Staines?—That is on the basis of present contracts.

17,475. (*Mr. Pember.*) That is what I wanted to know. It is on the basis of present contracts at Staines?—Yes.

See 17,675
-7. 17,476. (*Mr. Lewis.*) This does not include the cost of the connexion, does it, between Hampton or Kempton Park and the New River System?—No, certainly not.

17,477. Ought not that to be included in any estimate of this kind?—I have included a sum for that purpose. It is not on this particular estimate.

17,478. (*Chairman.*) Will you be so kind as to tell me why it is not on this particular estimate, if it is part of the expense of providing this?—Because I think it has been already granted that the 185½ million gallons supply must be provided by anybody. Therefore, it does not matter. This being here, you can compare it with any other supply under the same conditions.

17,479. But we want to know what the cost of doing it will be; and you split it up into two or three places, and have one thing on one estimate, and another on another estimate, till one does not know where one is?—I have not introduced anything for those items below the figure of 185½ million gallons.

17,480. Can you do it now?—I could not do it now.

17,481. (*Mr. De Bock Porter.*) To utilise this water, will it not be necessary to make that conduit which the New River Company have taken power to make, which you say will cost about a million?—I did not say it would cost about a million. But, certainly, it will have to be part of the supply.

17,482. It is a very material addition?—Certainly.

17,483. (*Chairman.*) Your estimate says, "Cost of supplying 185½ million gallons per day"?—Yes.

17,484. You cannot supply that without this main, which you leave out?—We supply exactly in the same way as the Staines Reservoir is supplied.

17,485. Never mind the Staines Reservoir. I am on the 185½ millions. You cannot supply them without a main, and you leave the cost of that main out of the estimate?—Yes.

(*Mr. Pember.*) What he means is this, only I am afraid he does not express himself quite clearly: "I have not got to compare my method of supplying 185½ million gallons a day with any other scheme to supply the 185½ million gallons, because Sir Alexander Binnie says I shall use that."

(*Chairman.*) I wish we could get rid of Sir Alexander Binnie.

(*Mr. Pember.*) So do I, if it could only be done compatibly with his perpetual happiness.

(*Chairman.*) There is perpetual antagonism between the gentlemen. Why will not you give us your own view of what it will cost to bring the present supply up to the conditions that have been laid down as necessary conditions? Never mind what anybody else has said.

17,486. (*Sir George Bruce.*) This brings the cost of supply up to delivery to the Staines Reservoir?—No, it

brings the cost of supply up to the delivery to the different companies.

17,487. (*Chairman.*) No, it does not, because it does not contain the connexion between whatever additional reservoir you suppose is going to be used, and the service reservoir of the different companies?—I beg your pardon, my Lord, it does. The New River Company take their supply from us at Kempton Park. The New River Company put in that main from there for their own purposes.

(*Mr. Lewis.*) But, still, that is part of the cost of the scheme.

17,488. (*Sir George Bruce.*) It is part of the distribution?—It is part of the distributing cost; it is not a part of the supplying cost. This is the cost of supplying water. We have not considered cost of distribution in this at all.

17,489. (*Mr. Lewis.*) But the scheme is not perfect until you go to the point where you are able to supply the water for the purposes of the New River district?—It would be just the same thing to us with the Grand Junction: that it was not complete unless I put in mains for them; but they do not want any mains at the present time. They are not laying them.

17,490. Have you estimated the cost of that connexion?—Do you mean the cost of connexion between Kempton Park?

17,491. Yes?—No, I have not estimated anything for that. It is not in here at all.

(*Mr. Pember.*) It does seem to me that the item in question is valuable for one purpose, and that is, to see what the companies, up to 185½ million gallons, may have to spend in the future.

(*Chairman.*) Of course, that is the whole point to make it worth anything.

(*Mr. Pember.*) It is not a question of comparison with Wales.

17,492. (*Mr. De Bock Porter.*) The New River Company cannot use any portion of this Staines Reservoir expenditure you have mentioned here without putting in that main?—That is so.

17,493. Then that is a very legitimate addition, is it not, to the expenditure?—Yes, certainly, if you include distribution—certainly.

(*Mr. De Bock Porter.*) Otherwise it is in the air as regards the part belonging to the New River Company.

17,494. (*Major-General Scott.*) As far as I can recollect, it was allowed on both sides that the cost of the distributing mains, whether by the Welsh Scheme, or whether by the Staines Scheme, could be left out of consideration, because they were common to both schemes. Is not that so?—This you will see is the Thames Scheme in both cases, General Scott, and, therefore, it was certainly agreed; and I have stated that they were both left out, because they were the same for both supplies.

(*Chairman.*) But do not you forget that this morning you told us that, in your view, the cost of bringing these 185½ million gallons up to the prescribed point would be a proper deduction from the purchase money of the companies. It is most important to know what that deduction is, and what it will amount to.

17,495. (*Mr. Pember.*) Unless there was a coincident income?—Surely, if there are mains, they are part of the income.

(*Chairman.*) This is the existing supply to existing consumers, and we want to know what must be spent in order to bring that existing supply up to the proper condition.

(*Mr. Pember.*) That is perfectly true; but I may venture, more as an apology for Mr. Middleton than anything else, to say that that estimate was put in for a particular purpose.

(*Chairman.*) Polemic.

(*Mr. Pember.*) Quite so.

(*Chairman.*) We do not want polemic evidence.

(*Mr. Pember.*) I quite agree; it was to compare Sir Alexander Binnie's estimate for this purpose with his own. If the 1,000,000*l.*, to which the Honourable Commissioner referred, for the New River main were to be added to the 2,148,168*l.* of Mr. Middleton's Estimate, the same thing would have to be added to the other.

(Chairman.) So be it.

(Mr. Pember.) Quite so. I am only speaking for Mr. Middleton. I quite admit that from somebody or another you will want to know what is to be added to each of these estimates.

(Chairman.) Mr. Middleton says he cannot give it.

(Witness.) If I may be excused, I have prepared this estimate because you asked me to do it in exactly the same way that Sir Alexander Binnie's was done, or I understood so, at least.

17,496. I do not think I said so?—I understood so, my Lord. It was made, therefore, exactly to compare. It is not one of my original estimates at all.

(Mr. Pember.) That is really his apology. I use that expression not in the sense of an apology.

17,497. (Chairman.) We will come to your differences with Sir Alexander Binnie, which are intricate enough, by-and-bye; but I want first to get your substantive view?—I shall be most happy to prepare that for next week, my Lord, if you will allow me to do so.

17,498. It is not only in connexion with the New River, but the 185½ million gallons covers the total supplies of all the London companies from the Thames?—Yes.

17,499. The whole of the Thames supply has to be brought up to what I call Staines reservoir conditions. We want to know what the total cost of that will be. It is not only in connexion with the New River, but it is connected with all the other companies?—As I understood it, this was brought to Staines Reservoir conditions because Staines Reservoirs have nothing to do with distribution. We do not distribute it at all, and that is perhaps the reason of the error.

(Mr. Pember.) Staines Reservoir plus distribution.

17,500. (Chairman.) Staines Reservoir is, I assume, up to the right mark for its 35 million gallons a day supply?—Yes.

17,501. But there are 130 million gallons a day to be brought up to the mark with the rest of the water companies, and we want to know what the cost of doing that will be.

(Sir George Bruce.) There is the cost of distribution.

(Witness.) It is only the cost of distribution which has to be added.

(Chairman.) No, not cost of distribution only.

(Mr. Balfour Browne.) And filtration.

(Chairman.) And filtration, of course—the whole cost.

(Witness.) That is the cost of distribution.

(Mr. Lewis.) Ought not the cost to include this—the construction of the works, and bringing the water into a position where it can be immediately used—where it can be available for immediate use?

(Mr. Pember.) Quite so.

(Mr. Lewis.) That includes filtration, and everything.

(Sir George Bruce.) You mean into the service reservoir.

(Mr. Lewis.) Yes. That would be a complete estimate of the cost of this undertaking, and nothing short of that would give us an idea really what the outlay is.

(Chairman.) You see, Mr. Middleton, if it be true that this item that we are vainly struggling to get is a proper deduction from the cost of purchase, it is a very material item.

(Mr. Pember.) Yes, subject to my invariable reservation about the income.

17,502. (Chairman.) Yes, this is to provide for the present distribution and supply?—But this is not present. It is an additional distribution. It is not present.

17,503. I beg your pardon; 130 millions is below what the Companies have been distributing this last year?—130. But we are taking 185½.

(Sir George Bruce.) And it is out of the Thames too.

17,504. (Chairman.) Yes, 130 out of the Thames. The Companies have been distributing more than 130 out of the Thames without anything from the Staines Reservoir this year?—Yes.

17,505. Therefore, the 185½ is not an addition?

(Mr. Pember.) There is one thing you will not forget to bear in mind, and that is this: With regard to the

cost of filtering, which one honourable Commissioner said ought to be added, you would not filter the water unless you wanted to use it, so that all cost of filtering water presupposes so much of what I call coincident income.

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(Chairman.) You have used every drop of the 130 millions, and more, this year?

(Witness.) But this is 185½, my Lord.

17,506. The Staines Reservoir part is provided for by your Staines Reservoir expenditure, and we have got that at, I think, 1½ millions?—But not with the distributing mains. There is the difficulty. To distribute means, means of supply which are wanted, and which have, therefore, to be paid for. It is a source of income.

17,507. It is distributed now; it is distributed only to the extent of 130?—To the extent of 130.

(Chairman.) And it is distributed without the proper precautions which make it both pure and permanent.

17,508. (Major-General Scott.) When we come to the year 1898, we shall find that 130 million gallons daily supply, to be brought up to Staines Reservoir conditions, would require storage for 8,314 million gallons?—I have not referred at present to the conditions of 1898, because we have taken them for 1893; but I can give them.

(Chairman.) Perhaps it would be well to finish with 1893 first before going to 1898.

17,509. (Major-General Scott.) I merely wish to point out that there is considerable expenditure which will be necessary in bringing up those 130 million gallons to Staines Reservoir conditions, especially if you take the 1898 conditions?—Undoubtedly, supposing that the conditions at Teddington are the same—200 million gallons at Teddington.

(Mr. Pember.) And supposing that there is any liability on the companies to do that with the first 130 million gallons?

(Chairman.) Yes, of course.

(Major-General Scott.) We know that the County Council would do it if the undertakings were purchased, according to their own statement.

(Mr. Pember.) Yes, I know.

(Chairman.) If it is not necessary or proper to be done, it would not be a deduction from the purchase.

(Mr. Pember.) It is not a statutory liability upon us.

(Chairman.) It assumes a momentous importance if this is to be a deduction from the cost of purchase.

17,510. Now let us finish dealing with your Estimate 1 I see you allow nothing for cleansing?—Nothing for cleansing.

17,511. And you only allow 476 million gallons for bottom and evaporation?—That is so.

17,512. Now you take your pumping into reservoirs, and there is a different figure, which puzzles me. Why 4,431 million gallons pumping into reservoirs?—It is merely an addition of so many years' pumping. It is actually taken from the table of flow. It has no relation whatever to the 4,373 just before it.

17,513. It has no relation to that?—No relation whatever.

(Mr. Pember.) That is storage.

(Witness.) It is water pumped from the river to replace anything that is taken out.

17,514. Why 4,431 instead of 6,431?—Because it happens to add up to that quantity in so many years.

17,515. (Mr. Pember.) Sixteen years?—Sixteen years of which we have got experience—if we take the experience of those 16 years.

17,516. (Chairman.) You take your 16 years' experience where?—From the gaugings of the Thames during 16 years. If we apply those to Staines Reservoir conditions, you would have to pump in that time 4,431 million gallons a year.

17,517. (Major-General Scott.) On the average?—On the average.

17,518. (Chairman.) Is that in order to get your reservoirs full, or what?—In order to keep the reservoirs full and to refill them as soon as we could after they were drawn down.

Mr. R. E. Middleton. 17,519. Then the average of 16 years means the average of 16 years' experience derived from Thames gaugings?—Yes, derived from Thames gaugings.

22 Nov. '98 17,520. Your mode of expression is so elliptical that it is extremely difficult to follow?—I am exceedingly sorry

(*Mr. Pember.*) This is the average annual pumping —

(*Chairman.*) It does not say so.

(*Mr. Pember.*) No; sometimes there is an advantage in examination-in-chief.

17,521. (*Major-General Scott.*) I cannot understand why you do not put in the cost of pumping for ever?—Because I do not see why it should be the cost of pumping for ever. I think it is a fairer basis to go on to take it up to this quantity, and to take it on for each item as the years go by.

17,522. (*Chairman.*) But then 185½ million gallons will be pumped for ever?—It need not be on that quantity. It may be on a different quantity. The pumping distribution will be pumped for ever, but not into the reservoir.

17,523. (*Major-General Scott.*) Not into the reservoirs for ever?—You have to fill them, but it may be they are higher or lower:

17,524. But you have taken the average?—Yes, it is an average of so many years—the experience of so many years; but that experience need not go on for other years.

17,525. Assume you took an average of 50 years, would not you have to go on pumping at that average for ever?—Not for supplying into the reservoirs.

17,526. (*Chairman.*) Why not?—Because it varies from year to year; it may be more, it may be a great deal less.

17,527. You get a figure which, as nearly as you can estimate, represents the correct amount you will have to pump?—No, I cannot say it is exactly an estimate. It is the actual experience of so many years.

17,528. Is that right, or is it wrong?—It is perfectly right for those particular years.

17,529. Then, if it is right, that right amount will have to be pumped for ever?—No, not necessarily.

17,530. Why not?—Because another year's experience will show it is not so.

17,531. Then that only shows your figure is wrong—that it is a wrong figure to take?—No, it is perfectly right, but it will alter with every year's experience.

17,532. (*Sir George Bruce.*) You have taken the annual cost, which you took at 1,661*l.* 12*s.*; is not that so?—Yes.

17,533. And you have multiplied that by 16 years' purchase?—Yes.

17,534. That is what it comes to, and you make your capital 26,586*l.*?—Yes, that is so.

(*Sir George Bruce.*) You could not multiply it for ever or it would come to infinity.

(*Mr. De Bock Porter.*) But you might multiply by 30.

(*Sir George Bruce.*) I am not saying that 16 years is the right number, but that is how it is done.

17,535. (*Chairman.*) That is how it stands, and I want Mr. Middleton to tell us why. (*To the Witness.*) You told us because the quantity you have to pump may vary from year to year, therefore, you are to assume that you are going to pump that variable quantity for 16 years only instead of for ever.

17,536. (*Mr. De Bock Porter.*) Suppose you had taken that at five years' average, you would have put down only five years?—I should have taken it for five years certain and gone on with the experience of the next supply, and so on, increasing the cost as the supplies go on.

17,537. We are rather trying to find out what is the capital value?—If you go on the capital value of the pumping, then it must be capitalised at so many years' purchase; but I certainly believe this to be the fairer way of looking at it.

17,538. (*Chairman.*) Then you go on to charge the pumping for supply at a quantity increasing from nil to 55½ million gallons a day during 16 years at so much?—Yes.

17,539. Why increasing from nil; the whole of it has to be pumped every day from now?—Yes, we are already pumping 130, and I had not included the pumping of the 130, which we are already entitled to pump, in the estimate.

17,540. Entitled to pump?—Entitled to supply. It is a supply already given which we need not store.

17,541. That is that the pumping of that 130 million gallons you say, and say perhaps truly, is no part of the extra expense to bring it up to Staines conditions?—That is so.

(*Chairman.*) That I assent to.

(*Mr. Balfour Browne.*) Then it is only for 16 years.

17,542. (*Chairman.*) It is for 16 years again. That we have sufficiently discussed?—I may say, if that is the case, that also the pumping into the reservoir is only to a small extent part of the pumping which has to be accounted for, because part of this pumping has to be done already. It has to be pumped into reservoirs now, but not quite to the same extent. The pumping is not quite so high. You will have in the future to lift it to a higher level than you have at present. But they have to be pumped from the Thames into the subsiding reservoirs.

17,543. You are now establishing another error in your estimate?—That is accounted for in the pumping to supply. It is all included in that charge.

17,544. You say this Estimate 1 is calculated upon the basis of the year 1893?—Yes.

17,545. That is assuming that during 16 years the drought would be as bad as in 1893?—No, not for the quantity pumped into the reservoir. I have taken it on the average of those 16 years that have preceded.

17,546. What has the year 1893 to do with it, upon this estimate?—Because the reservoirs must be made to meet the worst drought that we then knew, and all the reservoir capacity is made to meet the conditions of 1893. But the pumping is taken on the average.

17,547. Now, supposing you made your estimate on the basis of satisfying the conditions of 1898, then all those figures would be altered?—The capacity of the reservoirs.

17,548. Have you got a table of that?—Yes, my Lord.

17,549. Will you put it in then?—Yes. (*The Witness handed in Estimate 2. See Appendix L, Estimate 2.*)

17,550. The same observations apply to that, I suppose?—The same observations.

17,551. There is the enormous difference of 13,719 million gallons reservoir capacity as compared with 5,239?—Yes, that is so.

(*Mr. Pember.*) Before you leave Estimate 1, you will have noticed, my Lord, that he has got an item of 307,524*l.*, which is a figure which answers to those asterisks which are put before those two items of pumping 16 years. "If the pumping charges be capitalised at 30 years' purchase, a sum of 307,524*l.* must be added," and then that brings his estimate up to 2,148,000*l.*

17,552. (*Chairman.*) I see that perfectly. I only wanted to justify his omission to capitalise it in the first instance?—I think, so long as there is no sinking fund charged on the other side, that the capitalisation should not take place. Capitalisation is practically a sinking fund. That is my reason for not capitalising.

17,553. You say capitalisation is practically a sinking fund?—You are charging it for a great many years—after the time when the works will be in use.

17,554. But the works will be in use for ever; we have said that till really we are tired of repeating it?—I have explained myself badly, my Lord. I mean to say it goes a great deal beyond 30 years from now. To capitalise that 30, means 30 years, plus 16, really.

17,555. (*Mr. Lewis.*) Why capitalise it for a term at all? Why should it not be perpetual?—I have only used the term as being perpetual in this sense—

17,556. Of course, there is a great deal of difference between 30 years and perpetual capitalisation?—For that purpose I should think 30 years was a very fair allowance to make for capitalising.

(*Mr. Pember.*) Supposing you borrowed a sum of money to meet the total expense for ever, you could borrow it at 3 per cent.; that is really what it means?

(*Sir George Bruce.*) Quite so.

(*Witness.*) That is what I meant; and I think 30 years is fair.

17,557. (*Chairman.*) The difference between 30 years and perpetuity is small?—Is small, at any rate.

17,558. Thirty-three years, I suppose, would represent perpetuity. Then this makes a most formidable difference between these two estimates?—A very serious difference in quantity.

17,559. And in cost?—And in cost; although, of course, the added expenses being entirely for reservoirs, with no additional works in connexion therewith, the cost per million gallons falls considerably.

17,560. How do you justify reducing the cost from 300l. per million gallons, Estimate 1, to 2043l. per million gallons, in Estimate 2?—They are based on exactly the same calculations, my Lord—exactly on the same estimates that we have used for our own Staines Reservoirs. The prices are used in exactly the same way—the first and the second are based on exactly the same figures.

17,561. They cannot be based on the same figures, because they come out at such a very different result?—Yes, they are based on the same figures.

17,562. What do you leave out in your second?—The aqueduct and pumping machinery.

17,563. It is additional reservoirs only?—Additional reservoirs only.

17,564. And filters?—We have nothing to do with filters in this. *Mr. R. E. Middleton.*

17,565. Have you nothing to do with filters?—You asked me to do this as part of the distribution; they have nothing to do with the reservoir capacity, and you would not increase your filters by anything. There are no more filters required in the one case than in the other. *23 Nov. '98*

17,566. (*Mr. De Bock Porter.*) It is only the storage of the unfiltered water?—It is only the storage of the unfiltered water.

17,567. (*Chairman.*) So, again, if you take your pumping charges in perpetuity, the total comes out to 4,104,685l. as against 2,148,168l.?—Yes; I should say "Reduced to present value" is really a misnomer. It ought to be discounted to 1917; that is the date that the pumping commences.

17,568. No, pumping ought to commence to-morrow. Why do you put that on me, that the pumping ought not to begin till 1917; it never was contemplated?—You are perfectly right, my Lord; it refers to another point.

(*Chairman.*) We shall sit next Monday at 12.

(*Mr. Pope.*) I do not know whether your Lordship proposes to sit on Monday and Tuesday, or Monday only.

(*Chairman.*) Monday and Tuesday next week, I hope, *Recalled, Q. 17,569.*

[Adjourned till Monday next, at 12 o'clock.]

THIRTY-SEVENTH DAY.

Monday, November 28th, 1898.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Honourable JOHN WILLIAM MELLOR, Q.C., M.P.

Sir JOHN EDWARD DORINGTON, Bart., M.P.

Sir GEORGE BARCLAY BRUCE, Knt., C.E.

ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.

ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary.*

Mr. Balfour-Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.

Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.

Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.

Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.

Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. REGINALD EMPSON MIDDLETON recalled and further examined.

17,569. (*Chairman.*) I have only a very few questions to put to you still upon the estimates that were put in last time. I understand that you framed your Estimates 1 and 2 that were put in at Questions 17,465 and 17,549 upon the hypothesis that you would be able to pump into your reservoirs the quantities of water indicated by the average of 16 years' gaugings of the Thames?—That is so.

17,570. On the other hand, if a year like the year 1893 or the year 1898 recurs in the future, you will not be able to pump that water into your reservoirs?—Yes, we have no reason for saying not. The first estimate is based on 1893 throughout.

17,571. No, no; not throughout, because you have just told me that you have based the quantity of pumping in that estimate on the average of 16 years?—That is so. I was going to add throughout as regards the reservoirs, not as regards the pumping. *Mr. R. E. Middleton.*

17,572. Then, when the year 1893 recurs, you will only be able to pump a quantity less than that average of 16 years?—That 1893 will recur; it is in that 16 years. *23 Nov. '98*

17,573. It will recur twice?—No, I beg your pardon, I am wrong. It recurs in the next lot—immediately after the 16 years.

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17,574. I repeat, therefore, if a year like the year 1893 recurs, you will not be able to pump the quantity indicated in your 16 years' average?—We should have to pump a little more for the one year.

17,575. Therefore, in that year, you will not be able to fill your reservoirs, or keep full your reservoirs to the amount that would be estimated as necessary for such a year as that?—That is so.

17,576. That seems to me a flaw?—I think not, because it is taken on the actual experience of so many years. I think that it is not a flaw in that respect, and even if the year did recur again, the quantity to be added is exceedingly small. By adding the next year—that is to say, 1898, which is a very much worse year, and including 1898, we only get an excess of 500 millions, to be added on the average of the 16 years—it only makes a difference of 500 millions in pumping.

17,577. That is a difference then?—Yes, it is a difference, but the quantity and price is very small.

17,578. Then that is your defence?—That is my defence.

17,579. I had expected your defence to be this—that, although in a year like 1893 you would be obliged to pump more than the average, yet when you were estimating the cost of the pumping, it was fair to take the cost upon the average?—I think it is fair to take the cost upon the average.

17,580. Is that your defence of your estimate, or is it the other point which you put just now?—I think the defence of my estimate, is, that it is the experience of 16 years.

17,581. What is the use of talking of the experience of 16 years, if a year like 1893 occurs again?—We have the experience of 16 years in which it did not occur, and I think it is fair to take that experience.

17,582. You may get seven lean years; we have high authority for that. You mean, that if a year like 1893 recurs—take your Estimate 1—instead of pumping 4,431 million gallons, you will have to pump close upon 5,000 million gallons?—If 1898 came in, and was included—1898 is so much worse than 1893.

17,583. 1893, you told me, might make a difference of 5,000 millions?—No, 1898 I said really.

17,584. Did you?—Yes.

17,585. (Sir John Dorington.) Do you mean that 5,000 millions would have to be added, or you would turn the 4,400 into 5,000 millions?—500 millions would have to be added.

(Mr. Pember.) Turning the 4,400 into 5,000.

17,586-9. (Chairman.) Your Estimate 2, handed in at Question 17,549, is the one which represents the conditions of 1898, as I understand?—It is so.

17,590. And there your pumping is 5,000 million gallons?—Yes, 4,961 million gallons.

17,591. What 16 years have you taken there for your average—the same as in other estimates?—The same 16 years.

17,592. How does the average of the same 16 years come out different?—It has knocked off one year from the beginning, and it includes 1898, but not 1893.

17,593. Then it is not the same 16 years?—It is the same 16 years, inclusive of 1898, that is to say, it has a year knocked off the beginning instead of the end.

17,594. Really, Mr. Middleton, I do my best to understand you?—Yes, my Lord; I am afraid I did not do my best to explain myself in that case.

17,595. I am as far from understanding you now as ever. I have not the slightest idea whether you take the same 16 years in those two estimates, or whether you take a different 16 years—

17,596. (Mr. Pember.) I suppose you begin one year later?—Yes.

17,597. (Chairman.) Then they are not the same 16 years?—They are not the same.

17,598. (Sir George Bruce.) They are the same 15 years?—They are the same 15 years.

17,599. (Mr. Pember.) Those 16 years include 1898?—Yes.

17,600. (Chairman.) The year 1893 is in both, therefore?—It is in both.

17,601. (Mr. Mellor.) Therefore, it is the same 15 years, but not the same 16 years?—Not the same 16 years.

17,602. (Chairman.) I think on the previous day's sitting I asked you about the effect of the increase of the quinquennial valuation?—Yes, you did ask me that.

17,603. You told us what the increase of the rates paid by the eight companies was?—I did.

17,604. I had better finish, perhaps, your estimates upon the Thames supply first. Have you prepared an estimate of the cost of supplying 300 million gallons a day from the Thames?—I have prepared an estimate of the cost of supplying 185½ millions and also 300 millions.

17,605. Have you an estimate of the cost of the supply of 300 million gallons from the Thames, under the conditions of 1893?—Yes, that is so.

17,606. You will put that in, please?—Yes.

(Witness handed in Estimate 9. See Appendix L, Estimate 9).

17,607. (Major-General Scott.) Does this estimate assume that the whole of the 300 millions gallons, which I take includes the 130 million gallons now authorised, is under reservoir conditions?—Yes, the whole of it is under reservoir conditions.

17,608. Under Staines reservoir conditions?—Yes.

17,609. (Chairman.) I see you include there a reservoir space of 21,725 million gallons?—Yes.

17,610. For your pumping item there, you speak of an average for 35 years; what does that mean?—I begin from the beginning of the same date; it commences from the same date as the 185½ million gallons does not it?

17,611. What date?—The date is 1917.

17,612. It commences in 1917?—That is right.

17,613. How can you have experience of 1917 in 1898?—We can only have the experience of the past with regard to the future.

17,614. What are the 35 years upon which you have taken an average in this estimate—will you just give them to me?—They are from 1901 to 1935—those are the dates.

17,615. How can you have any experience of those years?—We can only have experience from the calculations of the past.

17,616. What years of the past have you made your calculations upon—do give me a plain answer?—Those 16 years that I have already referred to—the 16 years of the gaugings of the Thames. They have been repeated over and over again, and the calculation is made up from those 16 years.

17,617. Then why do you call it here an average of 35 years, whereas in the other you call it an average of 16 years?—Because the 16 years has reference to the 16 years during which that supply would be given; this refers to the 35 years during which a supply of 300 million gallons would be given.

(Chairman.) If you can make me understand this, Mr. Pember, I should be very much obliged to you.

17,618. (Mr. Pember.) I will try, my Lord. He says, I want to see—at least as I understand him—what the amount of pumping ought to be taken at during that 35 years of increasing amount; how am I to suppose it is going to increase—you will correct me if I am wrong, Mr. Middleton—how am I to suppose it is going to increase? I can only suppose it is going to increase in something like the ratio it has increased hitherto. I have got 16 years, during which I can project myself backwards so as to get at that ratio. Now then, having seen the ratio that I so get, I apply that to the 35 years that I have got to deal with, and I suppose that ratio will go on over the 35 years—is that correct, Mr. Middleton?—That is not quite right, Mr. Pember, but it is very nearly.

(Mr. Pember.) Now put it right, will you?

17,619. (Chairman.) For goodness' sake let us get it right. Wait a minute, Mr. Middleton; did you not tell me before that you calculated what amount you would have to pump into your reservoir in your Estimates 1 and 2 upon the average pumpings of 16 years in the past?—That is so.

17,620. Have you taken the same average in this estimate we are now upon?—It is not so, obviously, because it has a very much larger figure as the supply.

17,621. The average pumping must be the same?—No. If you increase your supply, you take more out of your reservoirs. You have the same reservoirs, but you take more out of them, and, therefore, you must put

more back. This is 300 millions of supply instead of 185½, increasing, of course, from 130 up to 185½, and then up to 300 millions. Up to 185½, the quantity to be pumped in, is 4,431 million gallons a year; up to 300 million gallons, it is 7,764 million gallons, on the average of the year. The whole way in which it is worked out is shown in a table and diagram I have got.

17,622. Stop a minute, let us try and get something clear about this. Will you put in that table and tell us what it shows?—First of all, the year during which the pumping took place, next the year of comparison; that is to say, the year of the gaugings of the Thames, to which it refers; next the average daily supply from the Thames during that particular year, which is calculated on the basis of Lord Balfour's Commission, of 35 gallons per head, and increasing at the rate of 18·2 per cent. per decennium; in the next column is given the net storage required, being the maximum deficiency considering the year; in the next is the water pumped to store during times of drought; then in the next is the number of days during which the drought extended; the next is the water pumped to store to meet times of flood; and the next column is the number of days flood; and the final column is the total quantity of water pumped during the year.

(*The Witness handed in Table 7, and Diagram E. See Appendix L, Table 7; and "Maps, Plans, and Diagrams."*)

17,623-4. (*Mr. De Bock Porter.*) Why does the table suddenly break from 1897 to 1883?—Because those are the 16 years, during which the figures have been made. We have no gaugings beyond that; and, therefore, we are obliged to use those over and over again in the year of comparison.

17,625. (*Major-General Scott.*) The year in which you make the comparison with any given year of the future is arbitrarily selected, is it not?—It is taken simply from the years of the past repeated over and over again. We begin with 1895 in both cases, 1896 in both cases, and 1897 in both cases; then we have to go back to 1883, 1884, 1885, 1886, 1887, up to 1897, and then we go back to 1883.

(*Mr. Pember.*) He treats them in cycles.

(*Witness.*) Yes.

17,626. (*Major-General Scott.*) The particular year of comparison with the future which is given here is settled by the way it falls in the order adopted?—Yes, it is a cycle.

17,627. That is your arrangement?—Yes, my arrangement; it is the same number of years repeated over and over again.

17,628. (*Chairman.*) There are 22 years of comparison in this table?—No, it is from 1883. The first three years are the years that have gone—1895, 1896, and 1897; then we go back to 1883, and it rises again to 1897, and gets to 1912; the actual year would be 1912, and the year of comparison is 1897. The next year is 1913, and the year of comparison is 1883. Then it goes on again.

17,629. Why do you take them over and over again; why do you take them 22 times?—Because we have no better information.

17,630. Why not—you have got a series in the table from 1883 down to 1897?—Yes.

17,631. That would be 16 years?—Yes.

17,632. Why not content yourself with that once instead of repeating 1895, 1896, and 1897, and repeating 1883, 1884, 1885, and 1886?—Because I have repeated simply the same number of years over and over again—1895 to 1897—

17,633. This is not an average of 16 years, but an average of 22 years, is it not?—No, it is not an average. As you see, the figure at the bottom, which is an average of the 22 years, does not agree with the figure you have got in my Estimate No. 1.

17,634. What is the use of this table except to perplex one?—Because you can calculate from this any particular number of years.

17,635. Very well?—If you strike out the first years down to 1901, and just average them on the 16 years, it will give the figure that I have given in the end.

(*Mr. Balfour Browne.*) My Lord, might we have a copy of that table?

(*Chairman.*) Will you give Mr. Balfour Browne one; it is a reasonable request?

(*Witness.*) Certainly.

(*Mr. Balfour Browne.*) I do not know that it does make it intelligible, but he thinks it does.

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17,636. (*Mr. Pember.*) May I ask one question with reference to this average. (*To the Witness.*) Have you not based your average upon your experience of your worst year?—I have not, certainly; the experience of all the years seems to me the fair average, certainly not of the worst year.

17,637. (*Chairman.*) But when the worst year comes, you will want the biggest amount of storage?—Certainly.

17,638. Then your average will not save the consumer from being without water?—Provision is made for pumping all the quantity on the worst year, but we have not to pay for pumping the quantity on the worst year. We pay for less in the good years, and for more in the bad.

17,639. Now you are going to my first question, and dealing with the point, is the worst year the year to take?—Yes, I am dealing with the question of cost. We have the power of pumping the fullest quantity.

17,640. Then I am to understand from your table that your third column is the average daily supply from the Thames?—Yes.

17,641. Is that the actual average daily supply?—It is very approximately so; as you will see, it is a little high because the average daily supply at present is only about 114 million gallons, and I have got it down as 125 million gallons.

17,642. You have got 150 million gallons in one case?—125 million gallons against the year 1898.

17,643. (*Mr. De Bock Porter.*) Then, when you get up to 1936, you have got up to 306 million gallons as the daily amount?—Certainly, and it goes on to the next one at 399.

17,644. Although at the present time only 114 million gallons is being taken out?—114 million gallons on the average.

17,645. (*Chairman.*) I see you treat this table as being an explanation of what figure in your Estimates 1 and 9?—The amount of pumping into reservoirs.

17,646. I see upon your Estimate 9 the amount of pumping into reservoirs is put at 7,764 million gallons?—Yes.

17,647. Where do I find that figure in your Table 7?—You will find the figure given there—not the actual figure, the nearest approximation to it is the figure at the bottom, an average of 7,602 millions.

17,648. Then how does the figure 7,602 justify or explain the figure 7,764?—Because the Table 7 was made to meet the original tables which were for the supply of 123½ million gallons, that is to say, which worked up to 309 million gallons.

17,649. Therefore, Table 7 as it stands does not explain Estimate 9?—Not as it stands.

17,650. That is just what I asked you?—But if you strike off the bottom figure of 29,955,000 and then average it, it will come to the same figure.

17,651. Your Estimate 9 is calculated upon the conditions of 1893, is it?—Yes.

17,652. Then, on the other hand, have you prepared an estimate for the same amount on the conditions of 1898?—Yes.

(*The Witness handed in Estimate 10. See Appendix L, Estimate 10.*)

17,653. There is a difference of 2,000,000*l.* roughly between the two?—Yes.

17,654. (*Mr. Lewis.*) How is the item of 1,155,000*l.* in the note in this last estimate made up?—It is worked out from the works of the different Companies, having regard to the length of pipe that would be required, and it is taken at the cost per mile of pipe of the different sizes.

17,655. Is interest included?—There is no interest included in that.

17,656. Would it not have been well to have stated that—"exclusive of interest"?—There is no interest included in this estimate anywhere.

17,657. (*Mr. Pember.*) It is prime cost?—This is prime cost throughout.

17,658. (*Mr. Lewis.*) Then what is the estimated cost of the New River Company's connexion?—1,000,000*l.*

Mr. R. E. Middleton. 17,659. And of the West Middlesex?—I could not tell you, I am afraid; I should have to divide them up.

28 Nov. '98 17,660. They are promoting a Bill in Parliament in the ensuing session, I believe?—Yes, but I have not heard what the amount of it is.

17,661. Will there be any expenditure on the part of the Grand Junction?—I believe not any.

17,662. (*Major-General Scott.*) I presume you made a deduction from that amount for connecting mains, for the mains already in existence?—Certainly. This is only from between 185½ million gallons and 300 million gallons.

17,664. (*Major-General Scott.*) Does this storage of 30,468 million gallons simply represent the storage for the difference between the 185½ and the 300?—No, that is the total storage.

17,665. But you just now said that this item for connexion of mains, was on account of the difference between 185½ and 300?—Yes, that is so.

17,666. That does not apply to the storage?—That does not apply to the storage. I can give you the total for the whole from 130 million gallons for the present time.

17,667. (*Sir George Bruce.*) Mains for 130 million gallons are in existence already?—They are in existence already, but I can give you what I estimate to be the difference between 130 million gallons and 300 million gallons, if you wish to have that.

17,668. (*Major-General Scott.*) You said just now it was the difference between 185½ and 300?—That is so.

17,669. But to Sir George Bruce, just this moment, you have stated it was the difference between 130 and 300?—No. I said I could give the difference between 130 and 300. I have got that on a separate estimate, and if you wish to have it I could give it to you.

(*Mr. Pember.*) If he will look at the first item of storage, I think the gallant General will see the capacity is set down at 30,468 million gallons, less existing capacity, 866, which shows what the storage of 29,602 million gallons refers to.

(*Chairman.*) No; surely that 866 is not the storage capacity for the 185½.

(*Mr. Pember.*) No, my Lord.

(*Chairman.*) The storage capacity for 185½ under similar conditions is 13,719.

(*Mr. Balfour Browne.*) That is so, upon Estimate 2.

(*Mr. Pember.*) Quite so; this is the total storage for the 300 millions, minus the 866 which at present exist.

17,670. (*Chairman.*) Yes. (*To the Witness.*) Now then, you have got two estimates, I see, estimating the cost of supplying from the Thames 114½ million gallons a day, in addition to the 185½ million gallons already authorised?—Yes, one is under the conditions of 1893 and the other of 1898.

17,671. It is simply a subtraction, I suppose, of the estimates of the cost of supplying 185½ million gallons a day and 300 million gallons a day, which you have already put in?—Yes.

17,672. You may as well put them in?—Very good.

(*The Witness handed in Estimates 5 and 6. See Appendix I, Estimates 5 and 6.*)

17,673. One of those estimates is calculated upon the conditions of 1893, and the other upon the conditions of 1898?—Yes.

17,674. I see there is a different average introduced there—19 years?—Yes.

17,675. Why do we jump from 16 to 35, and then to 19?—Because 16 years from 35 leaves 19. That is the only reason.

(*Chairman.*) I think that concludes your estimates upon the Thames supply, does it not?

(*Mr. Pope.*) You asked, my Lord, I think, last time, for some estimates, which Mr. Middleton has since prepared. It, no doubt, concludes what he has to say with regard to the Thames supply.

See 17,466
-97. (*Witness.*) You asked me on the last time, my Lord, to prepare some estimates including the cost of all the mains, the cost of the New River work to connect up the Staines reservoirs with their district, and the cost of the pumping capitalised. I have prepared those estimates. They are similar in many respects to the estimates of the cost of supplying 185½ million gallons, that is Estimates 1 and 2, but they include the cost of

the mains necessary to supply anything above 130 million gallons.

(*Mr. Pember.*) What you said, my Lord, was this, and I saw it, and told Mr. Middleton he had better get it ready for you. You said, "You have given us an estimate showing the cost of the Thames reservoirs, but you have not shown us anything which would represent the expense to which the companies would be put for the purpose of utilising the water so obtained for distribution." This is the addition he makes, and I suppose he compares it with the addition to be made to the cost of bringing Welsh water from Wales in the same way.

(*Witness.*) I have not made any comparison.

17,676. (*Mr. Balfour Browne.*) You have not?—No.

17,677. (*Chairman.*) Perhaps you will let me have those additional estimates?—Certainly. One is under the conditions of 1893 and the other of 1898.

(*The Witness handed in Estimates 3 and 4. See Appendix I, Estimates 3 and 4.*)

17,678. Now you have kindly handed me these estimates which are similar to Estimates 1 and 2 which you handed in at Questions 17,465 and 17,549, except for the fact they include the cost of the mains necessary to supply anything above 130 million gallons?—Yes.

(*Chairman.*) You have supplied the items, I think, that Mr. Lewis was asking about, namely, the additional expenditure.

17,679. (*Mr. Lewis.*) This does not include any estimate for the expenditure of West Middlesex, does it?—Yes, it includes all the cost; the New River Company and the other companies are all put together.

17,680. (*Chairman.*) This differs, I see, from your Estimate 1 in several particulars. When you come to the pumping into reservoirs, I see you have now capitalised them at 25 years' purchase, and discounted to 1898?—Yes.

17,681. What does that mean, "discounted"?—They are brought back as if the money was invested at the present moment—as if the necessary money to provide for the conditions existing when a supply of 185½ million gallons came into force.

17,682. (*Mr. Mellor.*) Do you mean that your discount is 25 years' interest?—No, the discount for each one will begin with two years, three years, four years, and so on, each item being multiplied by 25 years' purchase.

17,683. (*Chairman.*) Does that alter the number of years' purchase, or what?—It in no way alters the number of years' purchase; you merely discount it back so as to bring it to the present value.

17,684. (*Mr. Mellor.*) Could you give us what amount you take for the 25 years' purchase, in order to get that?—I am afraid I could not at the moment. I have got the figures at my office.

(*Mr. Pope.*) It would be a varying figure, according to the period when the payment has to be made. It is the present value of a payment postponed from year to year over the interval; that is the meaning of discounting back, and that is what Mr. Middleton means by discounting back. The payment will not be required to be made except at intervals of certain years, and then only a portion of the payment at first, gradually increasing over the rest of the term to more. The question is, what is the present capital value of payments so postponed: that is, discounting back to 1898?

(*Chairman.*) This is the item that represents the cost of pumping; 4,431 million gallons a year.

(*Mr. Pope.*) Yes.

(*Chairman.*) The cost of that per annum is 1,661l. 12s.; that is a cost that will continue always.

(*Mr. Pope.*) When it has been incurred, but it will only be incurred when the 4,431 million gallons come to be pumped. At the period when a thousand million gallons may be pumped, then the payment annually will be so much less. As I understand Mr. Middleton, whatever the annual payment is, he has assumed it is worth 25 years' purchase, but then, in order to ascertain its present value, he must discount it back to the present time.

(*Chairman.*) One moment, please; 185½ million gallons represents the present take from the Thames, including the Staines Reservoir take.

(*Witness.*) The authorised take, not the actual take; the take is only 114½ million gallons.

(*Chairman.*) Well, the authorised take; in order to have your reservoirs full that are necessary to secure that authorised take, you require to pump 4,431 million gallons.

(*Mr. Pope.*) Yes, whenever that is.

(*Witness.*) During the year, my Lord.

(*Chairman.*) At a cost of 1,661*l.* 12*s.*

(*Mr. Pope.*) Yes.

(*Chairman.*) And that, being a perpetual cost, has to be capitalised.

(*Witness.*) It is a perpetual cost, varying, of course, from year to year; it is only on the average of years that it is that cost.

17,685. Then we will take the average?—Of course, that was the only way in which I could easily calculate it.

17,686. You take the average as representing the annual cost?—That is so.

17,687. That being the only cost which must go on always, it is proper to capitalise it, and you capitalised it at 25 years only?—Yes.

(*Chairman.*) Then you give some discount for a reason that I am quite unable to appreciate.

(*Mr. Pember.*) He does not do the whole of it the first year; he does not do the whole of it the whole number of years; he only does a gradually growing amount.

(*Mr. Balfour Browne.*) That is the case in every capitalisation. If you capitalise a rent of 10*l.*, the rent is only payable in 30 years to come, but it is never discounted back.

(*Mr. Pember.*) No, the 10*l.* is payable every year.

(*Mr. Pope.*) It must be discounted back.

(*Witness.*) You have to discount it back.

(*Mr. Pember.*) This is only payable at a growing amount gradually altering, and your capitalising a rent of 10*l.* would be vastly different if it were 1*l.* the first year, 2*l.* the second, 3*l.* the third, and so on.

(*Mr. Littler.*) Your Lordship sees that it is capitalising an outlay, and the outlay is in proportion to the number of million gallons pumped.

(*Chairman.*) Of course.

(*Mr. Littler.*) Obviously, there will not be so many million gallons pumped in this year as in 20 years, say, and the consequence is that, in order to ascertain what is the ultimate burden if you put it into present money, you have to allow for the difference between this and 20 years to come.

17,688. (*Chairman to Witness.*) What basis have you made your discount on—what do your take off?—It is reduced back in the ordinary way on a four per cent. basis for an average of eight years in this particular item.

17,689. (*Mr. Lewis.*) If this had been a uniform charge extending over the whole period, you would probably have capitalised it at 33½, but inasmuch as it is a variable charge, you fix upon 25 per cent. as a fair average, is not that it?—That is not my reason for doing it. My reason for taking a four per cent. basis is this—that the charge for pumping per million gallons, as improved machinery is introduced, will be decreased. Therefore, I have considered that a capitalisation at 33½ years' purchase was too high and too long, and the 25 years' purchase was quite long enough considering that the 24*l.* per million gallons, or the 7*s.* 6*d.* per million gallons, charge would decrease as time went on.

17,690. (*Mr. De Bock Porter.*) It will only decrease by the adoption of improved machinery which would mean increased capital expenditure?—Not necessarily at all. Some of the improved machinery is even cheaper than the old machinery.

17,691. But it would necessitate the substitution of a new machine for the old?—Not in this calculation, because, of course, we have not got this machinery; this machinery has all to be put in.

17,692. You mean the machines that may be used 50 years hence may be very much cheaper and very much better than those at the present time?—Even those that are being put in at the present time are cheaper and more economical than the older machines.

17,693. (*Mr. Mellor.*) How long do they last?—I think some of them have lasted 50 years.

17,694. (*Major-General Scott.*) This Estimate 3 means that you are estimating for the supply of 185½ million gallons per day, of which 130 million gallons are not under storage conditions at all, is that not so?—No. The storage conditions are all the same throughout; the storage conditions include the 130 million gallons; but the pumping conditions of the mains do not include that 130 million gallons, because those are already done.

17,695. Those are the conditions of 1893, I think?—Yes.

17,696. I was thinking they were the conditions of 1893?—No.

17,697. (*Chairman.*) Very well, now let us take the one under the conditions of 1898?—Yes.

17,698. You have handed in that estimate?—Yes, it is Estimate 4.

17,699. (*Mr. Lewis.*) Does interest enter into the estimate here for connecting the works?—There is no interest in any of these.

17,700. I suppose the companies, in raising this capital, would include an amount to enable them to pay the dividend on the stock until the works were completed; so that if you have taken the capital representing the borrowing powers of the companies, that would include interest?—I do not think they have ever done so in the past, but that is a thing I am not absolutely acquainted with. I do not think they have ever borrowed money and paid the interest on it during construction.

17,701. But, still, they must issue debenture stock subject to a certain rate of interest?—They have to pay the interest, but they do not deduct it from the capital.

17,702. No, but it is included in the amount they borrow?—No, I think it is not included in the amount they borrow.

17,703. How do they find it—how do they pay it?—Out of revenue.

17,704. There is no revenue?—It is deducted from their revenue, I think I may say, to the best of my knowledge.

17,705. Take the case of the Staines Reservoirs?—Yes.

17,706. There is no revenue there, and they must provide for the dividend on the stock issued?—It is drawn from the revenue of the companies; the dividend is paid from the revenue of the companies.

17,707. And charged to the revenue accounts of the companies?—And charged to the revenue account, to the best of my knowledge. There is no payment, as far as I know, deducted from the capital sum.

(*Mr. Pope.*) The capital recently has been raised by debenture stock.

17,708. (*Major-General Scott.*) Is there not a special stock for the Staines Reservoir Scheme?—There is a special stock.

17,709. And those that have that stock have a special claim as against the stockholders of the companies themselves?—The companies themselves guarantee that stock and pay the interest on it.

(*Sir John Dorington.*) It goes in fact to diminish the dividends at the present time.

(*Mr. Pope.*) It is a charge upon the undertaking and that is the usual case where debentures are being dealt with, but the interest, of course, is paid totally irrespective of what the profits to the company may be. The dividends cannot be paid except out of the profits of the individual year.

(*Mr. De Bock Porter.*) But, still, the interest on the debentures is paid out of the profits of the year.

(*Mr. Pope.*) It may be paid out of the capital and, indeed, is frequently paid out of the capital if there are no profits. Still, the company is liable to pay the interest upon its debentures, and does pay it wherever it can get the money for it.

(*Mr. De Bock Porter.*) But no company is in the position of having no profits.

(*Mr. Pope.*) That, of course, is a matter of practical application. I was merely stating the general principal. The principle of the payment of interest on debentures rests upon a totally different principal to that of the payment of the dividends upon shares. The dividend

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upon shares can only be paid out of profits earned, the interest upon the debentures gets paid out of the resources of the Company, independent of its making profits in any individual year.

(Mr. Lewis.) My question is this: Out of what fund is the interest upon the debenture stock in the case of the Staines Reservoir paid.

(Mr. Pope.) Out of the contribution of the three companies—out of their revenue.

(Mr. Lewis.) To that extent the profits of the companies are reduced for the time being.

(Mr. Pope.) Yes. My friend Mr. Claude Baggallay calls my attention to the Act, and perhaps it would be better that we should answer that question categorically. Section 79 of the Staines Reservoirs Act, 1896, runs as follows:—"Notwithstanding the provision contained in the last preceding section, the three companies shall, as between themselves, and as between them and the Joint Committee, be deemed to be and shall be liable from time to time to bear and pay the interest on such debenture stock in the same proportions but in the same proportions only (whether in the case of any company greater or smaller than that company's original proportion of the stored water), as those in which they are respectively for the time, being entitled to take and have delivered to them the stored water, and the three companies shall from time to time account each with the others and each other of them and with the Joint Committee upon this basis." It is made a charge upon the resources of the joint and several companies who contribute to the funds to pay the interest on the debenture stock.

(Mr. De Bock Porter.) It may have a resultant effect upon the dividend.

(Mr. Pope.) Of course, just as any other increasing period of debit to the expense of the companies must decrease its dividend, because it makes a charge to the debit ultimately and a difference of revenue.

(Mr. Pember.) Until it becomes productive, of course.

17,710. (Chairman.) Now, before I pass from the Thames, are there any other tables that you want to put in to support or confirm the estimates already put in?—Yes, I should like to put in the whole of the tables from which these estimates are made up; and may I be allowed to say a few words with regard to these items that I have added here?

17,711. By all means?—I think it must be remembered that with regard to the pumping, whether into reservoirs or into supply, it is strictly remunerative.

17,712. (Major-General Scott.) What items are you referring to?—I begin with the pumping into reservoirs, and the cost of pumping to supply. It is only a charge which increases as the supply increases, and, therefore, is a directly remunerative charge, and is not a charge which, in my opinion, should be put to capital account.

17,713. (Chairman.) I fail to follow that: I beg your pardon?—As the pumping only takes place when there is a supply to be afforded, and that supply is remunerative, therefore no pumping can take place which is not remunerative, and, therefore, it does not seem to me to be a right principle to charge it against capital account.

17,714. I cannot follow that. We are trying to get at the cost of establishing reservoirs on the principles of the Balfour Commission?—Yes.

17,715. You surely must get your water into the reservoirs before you have satisfied all those conditions?—Certainly.

17,716. Therefore, you must pump into those reservoirs?—Yes, but that would be only pumping for one year, and, therefore, it would be only a small expenditure. The whole reservoir only contains 3,300 million gallons, and if we only fill that for one year, and it was only pumped out again, it would only cost the pumping of 3,300 million gallons for one year. If it is to be pumped to the extent I have given on this estimate —

17,717. (Mr. Mellor.) Which estimate?—Any of these estimates, it really matters little which. It must be because what was taken out was to be sent to the consumers, and, I think, it is remunerative pumping, because, if the consumers take it, they must pay for it; and the same, only to a larger extent, applies to the pumping to supply.

17,718. (Chairman.) If I am able to appreciate the drift of your observation, it is that you think those two items that you have put into your estimates ought not to be there?—I think they ought not to be there as a capital charge.

17,719. (Sir George Bruce.) You mean the pumping into reservoirs ought not to be entered there?—The pumping into reservoirs ought not to be entered there as a capital charge; that is what I mean.

17,720. You must multiply that by a certain number of years' purchase and make it a capital charge, surely, if you are comparing it with something else which requires no pumping?—If you are comparing it, then it certainly has to come in; but I am taking it simply as a capital charge. It is not a reduction of revenue.

17,721. It is a reduction of revenue?—No, because there is a remuneration, you see, for it, which is larger than the deduction.

17,722. If you had no pumping to do, your revenue would be bigger?—Certainly, if you had no pumping to do.

(Mr. Pember.) It is a reduction of net revenue.

17,723. (Sir George Bruce.) Yes, that is it, net revenue?—Yes, but the revenue to meet it is constantly increasing, for if the pumping increases, so does the revenue, of course.

17,724. (Mr. De Bock Porter.) It is a charge that will constantly be made?—Certainly, if the revenue goes on increasing.

(Mr. Pember.) Will you forgive me for saying that this question of pumping has two aspects—or rather the estimate has two. If you regard the estimate as merely put in to show the comparative cost of a Thames and a Welsh scheme, then you would deal with the questions of those items for pumping in a very different way to what you would if you were looking at the matter with a view to seeing whether any decrease ought to be made from the purchase value of the companies in consequence of the necessity to pump. In the latter case, of course, you will have to set off the revenue at once against the pumping, as Mr. Middleton says.

(Mr. Balfour Browne.) That was explained by Sir George Bruce just now.

(Mr. Pember.) That I did not happen to hear.

17,725. (Chairman.) Now you were going to put in some tables that corroborate the estimates you have already furnished us with?—Before doing that, my Lord, I should like to put in the estimates for the supply of 300 million gallons and for the supply of 114½ million gallons, which include the cost of the mains necessary to supply above 130 million gallons. They are Estimates 7 and 8 and 11 and 12.

17,726. Very well?—There are two of each. First, I will put in the estimate for the supply of 300 million gallons per day. One is prepared under the conditions of 1893 and the other of 1898.

(The Witness handed in Estimates 11 and 12. See Appendix L, Estimates 11 and 12.)

17,727. These are for the supply of 300 million gallons?—Yes. Then I will put in those for the supply of 114½ million gallons. Again there is one for the conditions of 1893 and another for 1898.

(The Witness handed in Estimates 7 and 8. See Appendix L, Estimates 7 and 8.)

17,728-9. Now have we finished those?—Yes.

17,730. Then we will now go to your subsidiary tables; would you hand me the first one?—I should be glad to put in the tables from the beginning from which they are calculated.

17,731. But we are on the first; you have not yet put that in; tell me what it is?—It is a table of the average supply of the companies in the different years from 1883 to 1897.

(Witness handed in Table 1. See Appendix L, Table 1.)

17,732. This table gives the average actual supply, do you say?—The average actual percentage of supply.

17,733. Percentage of what?—Percentage on the average of the year for each month.

17,734. Then you have got a figure for the average supply for each company during the year, have you?—Not for each company, but for the whole of the companies during the year.

17,735. Then you calculate what percentage of that has been supplied in each month, is that it?—In each month.

17,736. Then why not say percentage in each month—it is the percentage in each month of the average annual supply, is it not?—Yes.

17,737. Do you not think it would have been much clearer if you had said so?—Yes, it would.

17,738. Very well, I will not discuss it. What inference are we to draw from this table, if any?—This simply affords means of calculation in other cases of showing what the largest quantity was to be drawn during the summer months—what would be the average of the summer months, and also what would be the average of the worst months.

17,739. (*Mr. Pember.*) This shows what excess you have got to provide for?—It shows the maximum draft, and the excess you have to provide for.

17,740. (*Chairman.*) The only obvious inference that I can draw from it is that June, July, August, and September are months in which the supply exceeds the average annual supply?—Yes.

(*Mr. Pember.*) And the worst point was reached in June 1896, my Lord.

17,741. (*Chairman.*) You spoke about an average annual supply of, and a percentage in, each month; do you mean an average annual supply per diem, or per what?—Per diem. It makes no difference whether it is per diem or per month.

17,742. No; only one wants to know what one is talking about?—It is per diem.

17,743. It is a percentage in each month of the average annual daily supply?—That is so.

17,744. Is there any other table you want to put in?—Yes, but I think I might say two words on that table with regard to its effect on the present conditions under which the companies work. They are obliged to take their quantity from day to day. They are allowed 24½ million gallons a day, and they have to take that from day to day. They cannot take any more out of the Thames than that quantity; yet during some months you have to take as much as 21 per cent. more than that quantity—you have to supply 21 per cent. more than the average. The effect of that is that they never get that 24½ millions, and it seems to me to be an unfair restriction on the companies, that they should be restricted to a day-by-day supply, and thereby are not able at all to get 24½ millions from the Thames.

17,745. There are some months in which there is 21 per cent. more than the average—what month?—In the month of July in 1887 it was 21·11 per cent.; on the average, it was 12·78 per cent.

(*Mr. Pope.*) This point that Mr. Middleton makes now does not apply to the Southwark and Vauxhall legislation of last year. It was rectified in the case of the Southwark and Vauxhall. They gave them a longer period—not to take it by so much per day, but to take it on an average which enables them to get a quantity when the water is there and available.

(*Chairman.*) Yes, the average was taken over six months, and they could go up to 100 million gallons a day.

(*Mr. Pope.*) Quite so.

(*Witness.*) That, of course, is what I am driving at—that it would be much more fair to the companies if it was taken on a six months' average.

17,746. (*Chairman.*) Have you any other table?—Yes, I have one or two other tables I should like to put in.

17,747. What are they?—Table 2 is a table showing the daily average supply required in Greater London and in Water London in each year from 1895 to 1948.

(*The Witness handed in Table 2. See Appendix L, Table 2.*)

17,748. Will you explain what this table is?—It gives the number of gallons to be supplied totally, and from the Thames, during each year from 1895 to 1948, calculated on the basis of 35 gallons per head, with an increase in the population of 18·2 per cent. per decennium.

17,749. Then taking the years 1895 and 1896 and 1897, at any rate you have not taken the actual supply?—No.

17,750. But what the supply would be if you give the population 35 gallons per head per day?—Yes.

17,751. There, again, you have not taken the actual population, but you have assumed that you started from 5,732,950 people, and you have assumed that they increase by 18·2 per cent. per decennium?—Yes, under the conditions which were laid down by Lord Balfour's Commission.

17,752. Has the population increased at that rate?—I believe not.

(*Mr. Pember.*) He has taken the worst.

17,753. (*Chairman.*) What are we to infer from this table, please?—It is merely a table of calculations; it is nothing else.

17,754. The first portion of the table is for Greater London, is it?—Yes.

(*Mr. Pope.*) You will notice that the authority for the population in the table for Water London is the Water Examiner, and the authority in the table for Greater London is Lord Balfour's Commission.

17,755. (*Chairman.*) Where do you get your figure of the population of 1891 in Greater London?—From the figures in the Report of Lord Balfour's Commission.

17,756. I see you take a different figure in your table for Water London?—That is the population in Water London; the other is in Greater London.

(*Mr. Pember.*) And it carries it for six years further—down to 1951.

17,757. (*Major-General Scott.*) This figure of 5,232,155 is the population actually supplied, is it not?—It was the population actually supplied at that time.

17,758. And it does not include any proportion of the population which might happen not to be supplied?—No. That is the reason that I have based all my calculations on the figures for Greater London.

17,759. (*Sir John Dorington.*) That is, I suppose, based on taking an average of the number of houses?—That was based on the calculations made out during the time of Lord Balfour's Commission, and carried on at the rate that they stated the increase of population was going on at from that time.

17,760. (*Chairman.*) Do you mean that the table for Water London only gives the population in Water London, living in houses which are actually supplied by the companies?—No, living in Water London: I believe they are all supplied, or nearly all supplied.

17,761. No, we know from past evidence that there are large districts—in the Kent Company's district for instance, and in the New River Company's district—which are not supplied by the Company?—Yes, that is so. I should say that those were, undoubtedly, the supplies given in Water London.

17,762. Then you correct your former answer?—Yes, I correct myself.

17,763. This is the population that was actually supplied?—Yes.

17,764. Although it is not the total population of Water London?—That is so.

17,765. (*Sir George Bruce.*) Did you take that figure of 5,232,155 from Lord Balfour's Report?—I did.

17,766. You did?—Yes, I did.

17,767. Does it there state that it is only those receiving water and not the total population within the areas supplied?—It does not state it specifically, but I think it is understood so.

17,768. I suspect it is the other way?—Of that I will not be certain.

17,769. (*Chairman.*) Can you refer us to the paragraph in the Report of Lord Balfour's Commission referring to that? I find on page 10 of the Report of Lord Balfour's Commission this statement: "The total population supplied by the water companies in 1891, ascertained in this manner, was 5,237,062 persons?"—Yes, that is where it is got from.

17,770. That is not your figure?—I think that is so.

(*Chairman.*) No, you have given 5,232,155.

17,771. (*Mr. Pope.*) In your table for Water London you vouch the Water Examiner for that figure?—Yes.

(*Mr. Pope.*) Now, where do you find that authority; you do not vouch Lord Balfour's Commission for that figure, you vouch the Water Examiner for that?

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Mr. R. E. Middleton. (Sir George Bruce.) That was only one element in it. (Chairman.) It is not worth wasting time over it, perhaps.

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(Sir George Bruce.) No, I do not think it is.

(Chairman.) At any rate, I cannot find it in the Report of Lord Balfour's Commission.

(Mr. Pember.) It is only a difference of 5,000 after all, my Lord.

(Chairman.) It is not a very large difference.

(Mr. Pember.) I am told it arises from this; but no doubt your colleague will tell us—that the Water Examiner corrected his figures two or three years afterwards, and I think the corrected figures are taken.

17,772. (Chairman to Witness.) The only inference I can draw from this table—perhaps you will supply any other—is, that the 300 million gallons from the Thames will be sufficient to supply down to the year 1940 in Water London?—That is so.

17,773. And 400 million gallons, if you took as much as that, would be sufficient for supply down to 1953?—That is so.

17,774. Is there any other table you want to put in?—Yes, if you remember, I put in at Question 14,936, a table showing the storage required for an average daily supply from the Thames of 130 million gallons, increasing to 400 million gallons. That table was calculated on a year similar to that of 1893. I have now prepared a similar table based on the conditions of 1898.

(The Witness handed in Table 4. See Appendix L, Table 4.)

17,775. This table gives the storage required for an average daily supply from the Thames of 130 million gallons, increasing to 400 million gallons?—Yes.

17,776. I recollect the table you put in at Question 14,936, because I remember criticising that part of your heading, "calculated on the basis of 35 gallons per head" of the population, which is taken to increase at the "rate of 18·2 per cent. per decennium, in accordance with the figures set forth in the Report of Lord Balfour's Commission." Your table is totally independent of that—it is for the supply of so many million gallons?—But calculated on the basis of the increase of population.

17,777. Is it not calculated upon that basis; it is the amount of storage required for the supply of 130, 140, and 150 million gallons, and so on; never mind what the population is?—That is so, of course; but in order to get the year when this would be required it is calculated on the population of that year.

17,778. What is calculated on the population?—The quantity of water that would be supplied, and it is to be taken in connexion with the table I have just handed in; that is all, my Lord.

17,779. Yes, but the storage would be just the same, whether the population has increased at the rate of 18 per cent., or at the rate of 50 per cent.?—Perfectly true.

(Mr. Pember.) Only he wants to get the year in which any particular supply would have to be given, and, therefore, what particular storage would have to be supplied.

(Chairman.) He does not get that by this particular table, but by some other table.

(Mr. Pope.) Your Lordship is quite right.

17,780. (Chairman.) Very well. The one you now hand in is calculated on a year similar to that of 1898, and the two tables are intended to justify, explain, or support your Estimates 9 and 10, which were handed in at Questions 17,606 and 17,652?—Yes.

17,781. And also Estimate 1, handed in at Question 17,465?—Yes, all those estimates.

17,782. Is your storage in Estimates 9 and 10 the storage mentioned in these Tables 3 and 4?—Yes.

17,783. Are there any other tables you want to put in?—Yes, there are two tables showing the storage required for an average daily supply from the Thames of 190 million gallons increasing to 398 million gallons. In these the limit at Teddington Weir is taken to be 150 million gallons daily, and one is calculated on a year similar to 1893 and the other on a year similar to 1898. I have based a table to go with the table based on 1898.

(The Witness handed in Tables 5 and 6, and Diagram D. See Appendix L, Tables 5 and 6; and "Maps, Plans, and Diagrams.")

17,784. The figures here are totally different, this is: "Storage required for an average daily supply from the Thames of 190 million gallons, increasing to 398 million gallons"—why those figures? How could they help us in anything?—To show you the smaller amount of storage required if a lower limit were used at Teddington. That is the only use of them.

17,785. It is 150 million gallons a day at Teddington?—Yes.

17,786. I am afraid we must exclude that?—I thought that might be useful to you as a means of comparison, that is all.

(Major-General Scott.) It is merely a calculation for reference for any purpose we may require.

(Chairman.) Very well.

(Mr. Pember.) You see, my Lord, that that 200 million gallons has never yet been established by law.

(Chairman.) No.

(Mr. Pember.) Nor by the Report of Lord Balfour's Commission.

17,787-8. (Chairman.) I think you have already put in your Table 7, showing the storage required to provide an average daily supply from the Thames, increasing from 119 million gallons in 1895 to 399 millions in 1948, while maintaining a minimum flow of 200 million gallons at Teddington?—Yes.

17,789. Are those all the tables you want to put in in support of your estimates hitherto?—These are my estimates of the cost of Thames storage reservoirs, aqueducts and pumping machinery, which is called Estimate 13, (a), (b), (c), and (d); and then there is Estimate 14, showing, for the Thames storage scheme, the dates of commencement and completion of the several parts as constructed, and their cost to the several dates; the total sum on which interest is payable in each year; the interest payable at the rate of 2½ per cent. per annum; the quantity of water pumped, and the charges for pumping to supply and to store; with the capital cost and accumulated interest and accumulated pumping charges.

17,790. I must express my total inability to be able to grasp them, but put them all in?—Yes.

(The Witness handed in Estimates 13 and 14. See Appendix L, Estimates 13 and 14.)

17,791. Would you just for my behoof dispell the gloom which is over my mind, and tell me which figures in the previous estimates these figures support?—They are original estimates from which the rest are all produced. They give the storage required, and the other ones are only calculated back from these. Whatever variations have been made, these are the original ones.

17,792. (Mr. Balfour Browne.) What do the heavier-typed figures mean in Estimate 13?—If you look at the top, you will see the heavier-typed figures are based on the conditions of 1898.

17,793. (Chairman.) In these estimates I see the figures of 1898 are less than the figures of 1893?—That is so.

17,794. Hitherto, they have been more always?—Up to a certain point; but if you will refer to the estimates of the cost of supplying 114½ million gallons per day under the conditions of 1898, those are Estimates 6 and 8 which were handed in at Questions 17,672 and 17,727, you will see that they are less than the cost contained in the estimate for the supply of 114½ million gallons, including mains, under the conditions of 1893, which is Estimate 7, and which was also handed in at Question 17,727.

17,795. Anything else?—No, I think that, as regards the Thames, those are all the estimates.

17,796. Now we will pass, please, to Wales, and I want to take this as shortly as I can. Your general opinion, as I understand, is that to get a supply from Wales will be more costly than to get an equal supply from the Thames?—Yes.

17,797. (Mr. De Bock Porter.) Is it your opinion that it may ultimately be required?—I do not think that we need consider it.

17,798. (*Chairman.*) Why?—In some future generation it may come, but not within anything that anybody at present alive is likely to see, I think.

17,799. (*Mr. Mellor.*) You mean not for the next 50 years?—Not for the next 50 years.

17,800. (*Mr. De Bock Porter.*) But if it is necessary to go there at all, is it not desirable to go while an area can be secured?—I think that the other area ought to be used up first, as it is more reasonable to use up the supplies nearer home than to go to Wales now and to come back to the Thames afterwards.

17,801. (*Mr. Mellor.*) I do not think that is quite an answer to the question that was put to you. The question that was put to you, as I understood it, was this—would it be desirable to secure this area now for fear it should be taken by other towns?—I beg your pardon, I did not understand that, I think it is quite possible it may be desirable to secure it.

17,802. (*Sir George Bruce.*) In order that other people who have not got the Thames to go to shall not get water when they want it?—Yes. That, of course, is the selfish interest of a big city.

17,803. (*Chairman.*) One does not quite see why London has got a right to peg out a claim in Wales at all?—I do not think they have.

17,804. (*Mr. Mellor.*) No, but at the same time London is only competing with the other cities; anybody can buy these places, I suppose, who can agree with the people who own the land?—I presume they can.

17,805. (*Chairman.*) There is not an unlimited number of mountains in the British Islands?—Not at all—far from it.

(*Mr. Pember.*) I think Parliament has been very careless in allowing people to get hold of huge drainage areas.

17,806. (*Mr. Lewis.*) Does the land belong to private individuals or to the Crown?—To private individuals, I believe. I have no knowledge of any of this belonging to the Crown.

17,807. (*Major-General Scott.*) Your view as to the quantity of water to be obtained in the Thames basin is not founded on the Report of Lord Balfour's Commission, is it?—There is nothing, I think, in the Report Lord Balfour's Commission to say one way or another. It says that at least 300 million gallons can be obtained from the Thames, and 123 million gallons from pumping from Kent, beside the supplies already known. That will take us up to more than 50 years.

17,808. The 420 million gallons the Commission calculated upon took us up to something like 1931, did it not?—Yes. Then you have 100 million gallons more from the Thames and 123 million gallons more from Kent to add on to that.

17,809. That is your assumption, is it not?—No, it is mentioned distinctly in the Report of Lord Balfour's Commission, except as regards the Thames. The 123 million gallons is taken distinctly from the Report of Lord Balfour's Commission.

17,810. I am referring to the Thames?—I beg your pardon; that is from Kent. In the Report of Lord Balfour's Commission it says at least 300 million gallons, and there is no doubt that 400 million gallons can be obtained as easily as 300 million gallons—and more still.

17,811. (*Mr. Mellor.*) And leave an abundance of water for the navigation?—And leave abundance of water besides.

17,812. (*Chairman.*) Then it would become a question whether it is cheaper to get a pure and good water from Wales, which can be supplied by gravitation, or to get this additional quantity from the Thames, that will have to be pumped and filtered?—Yes. The other will have to be filtered, so Sir Alexander Binnie says.

17,813. Will it—I thought that we were told that this pure Welsh water was to be like nectar itself?—No, it is to be filtered, all of it.

17,814. (*Mr. Mellor.*) Is the Liverpool water filtered?—I really do not know.

17,815. Is the Manchester water filtered?—I am not certain.

17,816. Is the Glasgow?—Most of the new supplies are filtered, but Glasgow is not, I think.

(*Mr. Balfour Browne.*) I am told that Liverpool is, and Manchester is not.

(*Chairman.*) Manchester is the Thirlmere supply.

(*Mr. Balfour Browne.*) Yes.

(*Mr. Pope.*) They are content with subsidence reservoirs.

17,817. (*Mr. Lewis.*) Is the Birmingham water filtered?—The Birmingham water is at present filtered, but the new water is, of course, not yet supplied.

(*Mr. Pope.*) It is intended to filter it.

(*Witness.*) The Birmingham water will be filtered when it is supplied.

(*Mr. Pope.*) I should like to say that Sir Alexander Binnie appears to have calculated upon the possibility of filters being necessary; his estimates include the cost of filtration.

(*Mr. Balfour Browne.*) I should say distinctly, my Lord, that we propose to filter the water from Wales, but, at the same time, it is a totally different thing filtering such pure water as Thirlmere or Loch Katrine water and filtering Thames water, because you can allow it to go through very much more rapidly, and the cost of cleansing the filters is very much less.

(*Mr. Claude Baggallay.*) You have put down a large sum for filtration.

(*Mr. Balfour Browne.*) True, we are going to get a large amount from Wales.

17,818. (*Chairman.*) I believe I have not asked you this yet, and I had better ask you at this point. We know that Lord Balfour's Commission defined the existing sources of supply at 420 million gallons?—Yes.

17,819. Namely, 300 million gallons from the Thames, 52½ million gallons from the Lea, 40 million gallons from wells in the Lea Valley, and 27½ million gallons from wells in the Kent Company's district?—Might I say that from the Thames it is "at least" 300 million gallons.

17,820. Well "at least" if you please?—And that the amount in the Lea Valley was originally 56 millions, but they said for safety they put it down to 40.

17,821. Very well; that is the estimate in Lord Balfour's Report?—To supply up to a certain time, not to supply a certain quantity. They say, "We do not consider anything beyond this; this will be sufficient to supply up to a certain time."

17,822. Now what is your estimate that you consider consistent with the findings of Lord Balfour's Commission?—From the River Thames at least 400 million gallons.

17,823. (*Mr. Mellor.*) At least?—At least; from the River Lea 52½ million gallons, from wells in the Lea Valley 40 million gallons, from wells in the Kent Company's district 27½ million gallons, from the Southwark and Vauxhall well 2 million gallons, and from other wells in Kent 123 million gallons, making a total of 645 million gallons.

17,824. (*Chairman.*) That makes a total of 645 million gallons as a minimum?—Yes.

17,825. Do you think any supplies in the Thames Valley can be looked for beside that?—The Thames could store more than 400 million gallons for one thing; and besides that, you may draw water from the wells sunk in the chalk basin of the Thames, in my opinion, to the extent of at least 190 million gallons.

17,826. That would give a grand total of how much?—835 million gallons.

17,827. I do not think I need discuss with you the 400 million gallons; I do not know why you have taken 400 instead of 500, or 350, or any other figure?—I might have taken any other figure.

17,828. Of course, you might?—This is the one which I had gone into and could prove was economically possible and suitable.

17,829. What amount of water would go over Teddington Weir if you take 400 million gallons from the Thames for the water companies?—That is, of course, allowing 200 million gallons; it is on the condition that the 200 million gallons went over Teddington Weir, though I think that condition is an unnecessarily high one.

17,830. That could not have been verified this year. This year you could not have got 400 million gallons from the Thames and let 200 million gallons go over Teddington Weir?—Yes.

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Mr. R. E. Middleton. 17,831. (*Mr. Mellor.*) During September and October?—Yes, certainly.

17,832. (*Chairman.*) 200 million gallons did not go over altogether?—We cannot provide it, but we will not deplete the Thames. We undertake not to deplete the Thames below 200 million gallons, and there were only 10 days when the natural supply fell below 200 million gallons on the average, and the total quantity was only 96 million gallons of deficiency.

(*Mr. Balfour Browne.*) The average for the month was 76 millions.

(*Witness.*) That was the actual quantity after the companies had taken out their supplies.

17,833. (*Major-General Scott.*) How many days in the year do you say the supply would have been 200 million gallons or under 200 million gallons?—The quantity would be under 200 million gallons in a year like 1898 for 10 days; that is the only year when it has ever fallen below 200 millions.

17,834. If 400 million gallons were supplied?—If 400 million gallons were supplied, it would be 200 million gallons during the time that you were pumping to supply the full quantity, and drawing down to the 200 million gallons. The number of days will be found in Table 4, which I handed in at Question 17,774.

(*Mr. Pember.*) The storage prevents that.

17,835. (*Chairman.*) But in this very year there have been three months—namely, July, August, and September—in which the natural discharge at Teddington Weir was not 400 million gallons?—Yes, certainly.

17,836. Therefore, if you had taken 400 million gallons, there would have been nothing left, and the river would have been dry?—If you had taken it without storage, of course, it would; but this is with storage, of course.

(*Mr. Pember.*) Yes, with storage.

17,837. (*Chairman.*) What do you mean by “with storage”?—You cannot supply 400 million gallons unless you supply some of that from storage during the time when there is not that quantity flowing down the River Thames.

17,838. (*Sir George Bruce.*) Then when there are 400 million gallons there, you go on the supposition that you might take 200 million gallons out of the Thames, and you would take 200 million gallons out of storage in order to provide the 400 millions?—That is so.

17,839. And then there would be 200 millions going over Teddington?—Yes.

17,840. Then when there was less than 200 millions going over Teddington, you would draw nothing at all?—We would draw nothing at all.

17,841. But you would not be depleting Teddington?—We should not be depleting it.

17,842. It would be nature who was depleting it, if it was less than 200 million gallons?—That is so.

(*Mr. Pember.*) And we should be depleting the amount in our storage reservoirs, and that is the point the Royal Commission meant in paragraph 182 when they said: “We are of opinion that by the construction of storage reservoirs in the Thames Valley at no great distance above the intakes of the companies, it will be possible to obtain an average daily supply of 300 millions of gallons without taking in any objectionable part of the flood water. The average daily flow of the Thames at Teddington Weir, adding the water taken by the companies, is about 1,350 millions of gallons per day. It will thus be seen that when 300 millions of gallons are taken, there will be left to flow down into the tidal portion of the river an average daily quantity of not less than 1,000 millions of gallons; and we think that regulations could be framed under which the quantity we suggest could be taken, not only without reducing the flow of the river on the rare occasions of exceptional drought to the present minimum, but in such a way as to secure that the volume of water left in the river at these times would be substantially greater than it is under existing conditions.”

(*Mr. Balfour Browne.*) I do not understand that.

(*Mr. Pember.*) The key to that being storage.

(*Mr. Balfour Browne.*) There is no provision to make that substantially greater in any scheme of Mr. Middleton's.

(*Mr. Pember.*) I never said there was.

(*Witness.*) I beg your pardon, this does make it substantially greater. For years it has been less than 200 millions, and if we make a minimum of 200 millions, this does distinctly make it greater.

17,843. (*Mr. Balfour Browne.*) You are not going to make a minimum of 200 millions, you are only going to refrain from drawing when there is less than 200 millions?—Certainly.

17,844. You are not going to make it up?—No.

(*Mr. Pember.*) No, we are not Providence.

(*Chairman.*) What Lord Balfour's Commission means is, that whenever the natural flow is less than 300 millions, the taking of the 130 without storage conditions reduces the flow over Teddington Weir below 200 millions.

(*Witness.*) Yes.

(*Chairman.*) Whereas, if you make proper storage, you will then never reduce the flow below 200 millions unless nature does it.

(*Mr. Pember.*) Yes, that is it.

(*Chairman.*) And consequently there will be more than under existing conditions.

(*Mr. Pember.*) That is it.

(*Mr. Mellor.*) I suppose the lower the river gets, the more necessary must the filtration be.

(*Witness.*) That is not at all the case.

(*Mr. Pember.*) It is the other way.

(*Witness.*) The water is brighter and clearer under those circumstances.

17,845. (*Mr. Mellor.*) I mean to say that the pollution which goes into the water would be in a more concentrated form when the river is low than when the river is high?—I think the chemists who have dealt with this will tell you it is not so, but without going into the question very thoroughly I could not answer that question.

17,846. I only wanted your opinion?—From my knowledge, I say that, notwithstanding the smaller quantity of dilution of the pollution, it is better in the summer months than it is in the winter months.

17,847. (*Chairman.*) I do not know that I have anything else to ask you about your figure of 400 million gallons from the Thames, but you add to Lord Balfour's Commission's estimate the 123 million gallons a day from other wells in Kent?—Yes.

17,848. What do you base that upon?—Upon paragraph 106 of the Report of Lord Balfour's Commission. It is right at the end of the paragraph, my Lord. “If we take the amount to be as much as seven inches, which will still be allowed to be a moderate computation for an average of ordinary years, then the area west of the Medway will yield 21,840,000 gallons a day, and the ground to the east 101,080,000 gallons, or say 123 millions for the whole district of chalk.”

(*Mr. Pember.*) You ought to read the last lines of 106. “The great proportion of the water thrown out from the chalk in this part of Kent is not utilised for water works, but runs out into the Thames. Perhaps about 10 million gallons are pumped daily from wells in the chalk within the district.”

17,849. (*Chairman.*) Yes, but you have not added that if you take these 123 millions, according to the Report of Lord Balfour's Commission you would rob the Thames of so much?—That is in the tidal portion of the Thames; it is right down towards the Medway. It does not affect anything above Greenwich.

17,850. Then the Thames would become a salt water river?—No, I do not think so. I do not think it would make any difference down there.

(*Mr. Pope.*) There is no water taken there for supplying the tideway of the Thames.

(*Chairman.*) No, but you would have 123 million gallons less of fresh water.

(*Mr. Pember.*) I do not suppose 123 million gallons will be felt at the mouth of the Thames in the tidal portion.

17,851. (*Chairman.*) I am no judge of that. (*To the Witness.*) Very well, I see how you would justify that. Where do you get your 190 millions from wells in the chalk basin of the Thames?—That is my own calculation.

17,852. Based on what?—On the wells in the Lea Valley.

17,853. Do you assume that you would get as much water from the chalk in the Thames Valley as you do get now from the chalk in the Lea Valley?—I have not taken it quite so high as the quantity in the Lea Valley, but I assume you could get a quantity, which I have roughly estimated at 190 millions, from the chalk in the Thames Valley as you do in the Lea.

17,854. I suppose you would submit the inference, that if those calculations are anywhere near correct, there is water enough in the Thames Valley for many years to come?—Yes.

17,855. Therefore, any scheme for getting water from Wales ought to establish a clear superiority in cheapness and in other advantages?—Yes.

17,856. Now we will turn to Wales. What have you to say about not taking into account the 185½ million gallons in any comparison of expense; I do not understand that; if you will make me, I shall be very much obliged to you?—I think it has been agreed on all sides that this 185½ million gallons has to be supplied from the Thames by whoever is the owner of the water supply in London, and, therefore, it appears to me to be unnecessary to consider that in the calculation of cost. It can only be the cost of supplying after that 185½ million gallons is in effective operation.

17,857. But what we have been labouring to get is the cost of making that 185½ million gallons a secure supply by proper storage; that is what we have been considering?—No; we have gone on to the 300 million gallons, of course.

17,858. Then the difference between the cost of 185½ millions and the cost of 300 millions is what will have to be incurred in the Thames Valley?—That is so, and that is why I have cut out the 185½ millions, because those works, whatever they are, have to be done by whoever owns the water supply.

17,859. That is quite true; but in one case they will have to be paid for by the companies?—Certainly; but they would be the same works.

17,860. Have you visited the sites of the proposed Welsh supply?—I have.

17,861. What do you say about the geological conditions of those sites?—I do not think they are quite so good as they are in some other districts that I have seen, and I do not think that the lengths of the several banks for impounding the water can be accurately estimated.

17,862. Why not?—Because the sides of the valleys are covered with drift, and the depth of that drift is unknown. In the case of the Yrfon Reservoir for instance, there is a railway running alongside there in which the drift is cut through for a depth of about 20 feet, and there is no solid rock at that depth.

17,863. (Mr. Mellor.) What is the nature of the drift?—I presume it is an ordinary glacial drift passed down the valley by glacial action. It is made up of fragments of rock and soil and sand.

17,864. Were you looking for solid rock?—I was looking for solid rock. The solid rock is visible in the bottom of the valley in the river, but it is not visible in the sides.

17,865. (Sir John Dorington.) Could you not join the bank into the drift?—Not unless you took it very far in.

17,866. I suppose the inference you draw from that is, that the cost which Sir Alexander Binnie gave us for the dam is insufficient—is under-estimated?—That it is under-estimated, I should say; at any rate, that it is impossible to estimate it with great accuracy.

17,867. Because the depth of this drift is uncertain, you say?—It is uncertain.

17,868. Is the stone of the district fit for making a dam?—It is not the best quality for the purpose, I should say.

17,869. (Mr. Mellor.) Why not?—Some of it is too soft, and I should say the other was rather too hard, that is to say, it would be expensive in working. It is very much of the same quality as some of what is being used in the works at the Elan Valley for Birmingham, and it is very hard to work indeed, and very expensive to work.

17,870. Have you seen those works?—Yes, I have seen those works.

17,871. (Major-General Scott.) Then would it be fair to take the cost of the Elan works as a basis for the cost of these reservoirs?—Yes, I think so.

17,872. (Mr. Mellor.) Do you find the same drift there?—To a certain extent—not so much. At the dam the amount of drift is very small.

17,873. (Chairman.) Do you suggest that the stone for the dam will have to be brought from a distance?—It will either have to be brought from a distance, or it will have to be worked at a considerable cost.

17,874. You say you know the Elan Valley where Birmingham has gone for a supply?—Yes, I have been there two or three times.

17,875. How does the depth of drift there compare with the drift in the Yrfon?—I do not know the depth of the drift in the Yrfon. In the Elan Valley there is very little, and you get to the rock almost immediately up the sides. It is a very narrow cleft, and the rock has been washed pretty bare.

17,876. You did not endeavour to get to the rock anywhere in the Yrfon Valley?—No, I did not.

17,877. Then the only means you have of estimating the depth of the drift is a railway cutting?—That is all; and the general appearance of the valley. I do not say that it is deep—I only say that it is uncertain.

17,878. (Mr. Mellor.) I suppose by boring you could ascertain?—Yes.

17,879. I mean without very much expense, could you not?—Boring is always rather expensive to do; it is not done very cheaply.

(Chairman.) If I recollect aright, Sir Alexander Binnie's view was that he would begin with the Yrfon, was that not so?

(Mr. Balfour Browne.) Yes.

(Chairman.) And the Towy next, was it?

(Witness.) The Towy.

17,880. (Chairman.) I think you have already given us the number of acres of land that would be wanted for the total catchment reservoir—for the two reservoirs?—Yes.

17,881. Namely, 102 thousand acres?—Yes.

17,882. And Sir Alexander Binnie told us upon that that he only intended to buy 3,300 acres?—That is so, but I certainly had understood before that it was a general principle in these things that the whole drainage area should be purchased. In Birmingham it has been done.

(Mr. Pember.) They bought over 50,000 acres at Birmingham.

17,883. (Chairman.) What are the conditions of the Elan Valley—is that a valley in which population is creeping in and increasing?—No.

17,884. How is it occupied now—by farms?—I think by farms. There are, I think, three houses in it, as far as I remember, except those that have been built for the purpose of the works—three old houses, and the rest are farms.

17,885. Grazing land and arable land?—It is grazing land. I did not see any arable land there. There is a little arable land in the valley of the Yrfon, the rest is grazing land, and there are a good number of buildings.

17,886. What sort of buildings?—Village houses, farms, and schools and churches.

(Chairman.) I think we have got all those figures already; however, you may repeat them if you like for shortness sake. See 14,468.

(Sir George Bruce.) We do not want them, do we?

(Chairman.) I do not know that we do, and I think we have had them given already.

(Witness.) I think so.

17,887. (Chairman.) There are 6 miles of railway to be diverted, 13 miles of road to be replaced, 7 churches, chapels, and schools to be destroyed, and 31 farms and villages involving 108 houses?—Yes.

(Chairman.) I do not think we need go to anything further in Wales. Does the Llangorse Reservoir come next in Sir Alexander's scheme—I forget.

(Sir Alexander Binnie.) No, my Lord, it is not included in the first instalment.

Mr. R. E. Middleton. (Chairman.) I know it is not in the first instalment, but is it in the second.

28 Nov. '98 (Sir Alexander Binnie.) No, my Lord, we should proceed from the Yrfon to the Towy, and from the Towy to the Upper Wye.

17,888 (Chairman to Witness.) Do you know anything about the Upper Wye district?—Yes, I have been there, I have seen that too.

17,889. Could you give us any information upon that?—That is more rocky. The sides of the rock there are steeper and I should think the drift is shallower, but there is drift again in that basin.

17,890. What is there to be diverted there—what acreage is to be taken?—There is very little there at all. There might be one farm, but I think that is about all. There is one piece of road to be diverted, but otherwise there is nothing.

17,891-3. And no railway to be interfered with?—No railway there.

17,894-7. Nor churches nor chapels?—No.

17,898-9. No desecration?—No.

17,900-1. Do you know any valley in Wales that has not got drift in it?—No, I do not think so. I have never seen one yet.

[After a short adjournment.]

17,902. (Chairman.) What do you look upon as the amount of land required for the whole Welsh scheme as you have heard it?—It was 488 square miles of land.

17,903. That sounds almost like the area of a county?—It is two-thirds the area of the county of Brecknock, and a third more than the area of the county of Radnor.

17,904. (Sir George Bruce.) At the Thames you get the watershed without paying for it?—Yes.

17,905. (Mr. De Bock Porter.) Do you know what rate per acre you put in, in estimating the value of that land?—In estimating the value of the land for the Yrfon Reservoir?

17,906. Yes?—So far as I remember, it is 10*l.* an acre; but, of course, if the quantity is reduced to the 3,300 acres simply for the reservoir site alone, the price for that would be very largely in excess of the price for the whole. Probably the price would be over 100*l.* an acre for that, including severance and the destruction of property.

17,907. (Chairman.) You have given us certain figures for the supply you reckon upon from the Lea and from the Thames?—Yes.

17,908. You have given us 52½ million gallons from the Lea?—Yes.

17,909. What percentage is that of the natural average flow?—The natural average flow is 116 million gallons.

17,910. But do answer the question?—It is a little less than half.

17,911. What?—A little less than half.

17,912. A little less than half of the natural average flow, is it?—Of the natural average flow.

17,913. What percentage is it of the smallest flow known?—It is 85 per cent.

17,914. Even this year?—No, that was for the year 1864.

17,915. What is it this year?—I have not taken it out, but it will be even somewhat greater this year. It will be a larger percentage this year.

17,916. It will be more than the whole flow, will it not?—No; 52½ million gallons will not be more than the whole flow.

(Mr. Pember.) 90 something was the lowest on any one day.

(Mr. Balfour Browne.) 43.

17,917. (Chairman.) It is the Lea we are on. You ought to be in possession of those figures. There has been no month in this year, except January and March, in which the supply of the Lea has reached 52½ million gallons?—I think that is measured at Fielde's Weir, and you have to add 22½ million gallons on to that for the take of the New River Company above.

(Chairman.) Those figures are in a most frightful confusion about the Lea, that I cannot understand them.

(Lord Robert Cecil.) I may venture to say your Lordship is perfectly right. It is only in January and March that the assumed natural discharge at Fielde's Weir was over 52½ million gallons.

(Chairman.) Yes, at Fielde's Weir.

(Lord Robert Cecil.) That is the assumed natural discharge. That is after making allowance for what is taken by the New River.

(Mr. Pember.) No.

(Lord Robert Cecil.) It is so. If you look at the table which was put in at Question 15,324, you will see that I am right.

(Chairman.) The natural discharge includes what the New River Company takes.

(Lord Robert Cecil.) Certainly.

(Chairman.) And the natural discharge has only reached 52½ million gallons on two months of this year.

(Lord Robert Cecil.) That is so, my Lord.

(Witness.) That is right.

(Chairman.) If you look at Question 15,324, you will see the table there, but never mind.

17,918. (Sir John Dorington.) Do you look upon the demand on the Lea as an extravagant demand?—No, not 52½ million gallons. With proper storage it can be perfectly easily met.

17,919. And leave an adequate quantity in the river?—And leave an adequate quantity in the river.

17,920. (Chairman.) What I have just stated only strengthens your argument. It appears that this year it is not only 86 per cent., but much more than 86 per cent. has been taken?—Much more than 86 per cent. has been taken.

17,921. What would a supply of 400 million gallons taken from the Thames represent as an available percentage of the water?—44 per cent.

(Mr. Pember.) Yes, that may be all perfectly true, but still the 22½ has to come off.

(Lord Robert Cecil.) No.

(Chairman.) No, not to come off, it is included in the third column of the Table.

(Mr. Pember.) Quite so, but then it is no use talking about 52½ as being a great deal more than the total flow, when you only make it a great deal more by reducing the total flow by the 22 million gallons.

(Chairman.) No, no, not if you look at the Tables we have got.

(Mr. Pember.) The average daily discharge at Fielde's Weir was said, at the lowest point I can come to, to be so much.

(Chairman.) And that includes the average daily abstraction by the New River Company.

(Mr. Pember.) But not in the first column.

(Chairman.) The third column is the one I took.

(Mr. Pember.) Yes, that is right there.

17,922. (Chairman to Witness.) Therefore, I suppose your argument from what I have just asked you is, that the Thames, at any rate, is not drawn upon to the extent it might be?—That is so, my Lord.

17,923. And that it is premature to go to Wales till you have drawn upon the Thames as far as you can?—Yes.

17,924. Do not the figures of this year show that 52½ million gallons is an extravagant amount to expect to get from the Lea?—No, my Lord, I do not think so, not with proper storage. If you take it without proper storage, of course it is extravagant.

17,925. (Sir John Dorington.) Have you seen the Table we had handed in at Question 15,324?—Yes.

17,926. Is that Table accurate in your opinion. Does it coincide with your information, take the third column?—Yes, I believe that that is quite correct.

17,927. Then 52½ million gallons would exceed the supply in the River Lea for every month of the year except January.

(Chairman.) And March?—Except January and March. Of course, we have three months more to add to this, in which it probably will be considerably in excess.

17,928. You say proper storage is necessary?—Storage.

17,929. With proper storage and accumulation of reserves, even in a year like this 52½ million gallons is not too much to expect to get from the Lea?—No, they can get 52½, it is not too much to get from the Lea.

17,930. (*Mr. De Bock Porter.*) Is that with the present storage, or with storage to be provided hereafter?—With storage to be provided obviously.

17,931. (*Major-General Scott.*) Is any proportion of that storage to be used for compensation to the river?—No, I should think not. You are obliged to give the quantity for navigation, unless the conservators like to stir it up; you would have to provide that quantity during the whole time and let it pass.

17,932. Then you would put no limit beyond the natural power of the river to supply the water to the abstraction of water from the river which is used for other purposes?—I think I should not do so except in the case of the Lea, where the powers are already granted. They have the right to take the whole flow of the river, except the quantity used for navigation. I do not say that that would be right for another river which is not under the same obligation.

17,933. We are arguing at present from the Lea to the Thames?—I should not say the same thing of the Thames. We have reason to believe it would not be so in the case of the Thames, because you want a limit of 20 million gallons at Teddington. If you have got the limit of 200 million gallons at Teddington, you are going to 40 times the quantity of the Lea.

17,934. (*Chairman.*) What is the use of arguing from the Lea to the Thames if the conditions are different?—Except that the conditions are more favourable to the Thames than they are to the Lea.

17,935. (*Sir John Dorington.*) Why should you treat the Lea worse than the Thames?—Because they have got an Act for doing so already. That is the only reason.

17,936. Because the law has made a mistake, do you think it should never be rectified?—I do not think there is any necessity for rectifying it in this particular case. They have gone on for years and years without more than the navigation water, and I think they can perfectly well go on in the future in the same way.

17,937. (*Chairman.*) The argument you present to us is this: That you ought to be allowed to take 44 per cent. from the Thames because you have been allowed to take 50 per cent., and in some cases 100 per cent., out of the Lea?—Yes.

17,938. If the Lea is reduced to such a shocking condition that it is hateful to everybody, why should we do the same with the Thames?—I do not think it is reduced to a condition in which it is hateful to everybody.

17,939. Not when the flow is reduced to nearly nothing and you have to pump back water in order to float a barge?—Yes.

17,940. But is that the condition to which you would wish to reduce the condition of the Thames?—That is not the state of it, I am arguing.

17,941. Why do you argue from the state of the Lea that you are justified in taking more from the Thames?—I did not say the state of the Lea. You must remember the state of the Lea is quite exceptional.

17,942. But we must foresee exceptional years in the future?—No; if proper reservoir capacity is constructed, there would be no exceptional years in the future.

17,943. (*Major-General Scott.*) No exceptional years as regards the water supply for the use of London, but exceptional years as regards the balance that remains in the river, and so on?—There should not be, if there is proper storage provided—there should be no difference.

17,944. Is there to be storage provided?—That is more than I can answer. I cannot answer except on the general principles.

(*Mr. Balfour Browne.*) You said before, in answer there is no proposal to make storage for compensation purposes.

(*Mr. Pember.*) No, but what he says is my storage is of such an amount as will prevent me from being under the necessity of ever drawing down by any act of mine the Thames below 200 million gallons.

(*Mr. Balfour Browne.*) And the Lea.

(*Mr. Pember.*) No, the Thames we are talking of now.

(*Witness.*) From the Lea daily five million gallons will be allowed for navigation. *Mr. R. E. Middleton.*

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17,945. (*Mr. De Bock Porter.*) When you speak of five million gallons being required for the Lea, do you include that which has been recently provided, or in course of being provided, by the East London Company, or do you mean storage reservoirs which have not been put before us at all?—I think that storage reservoirs which have not been put before you at all will be requisite.

17,946. (*Chairman.*) It is quite clear that the East London Company have been wanting in foresight in not providing those reservoirs already?—That is a question, whether they or other people have been wanting in foresight in the past, but there is the fact, of course, that they have been short of water.

17,947. There is the fact that the consumers have been without water the greater part of the summer?—That, I think, is denied.

17,948. (*Sir George Bruce.*) They have had 25 gallons a head, if you remember?—They have had 25 gallons a head all the time.

17,949. (*Mr. Balfour Browne.*) And still without water?—That, I think, they have not proved.

17,950. (*Chairman.*) 17 gallons for domestic use?—17 would be a very good supply in many places. I know plenty of places where they have 18 for all purposes, trade included (and they think themselves very well off indeed) on constant supply.

17,951. We have heard of numbers of cases where the people did not get a drop of water in their upper cisterns. The water could not reach them because it had first to fill the lower ones?—I thought Mr. Bryan distinctly said that that was due to the fault of the people in not looking after their cisterns.

17,952. (*Mr. Pember.*) I thought it was said to be a defective fitting?—Certainly he said that.

17,953. (*Chairman.*) He said it was their own fault that the water could not reach the upper ones?—Certainly.

17,954. And it was not on long enough to reach them. Mr. Bryan said in one case he examined a ball tap defective, and the water could not get to the cistern. He also said that the water could not reach the upper cistern till it had filled the lower cisterns?—That is naturally a physical certainty.

17,955. (*Mr. De Bock Porter.*) It was not on sufficiently long to reach the upper cisterns?—That is what Mr. Bryan denied. He said, in the only case brought to his notice, the defect was due to a faulty ball.

17,956. (*Chairman.*) At any rate, as a matter of fact, no water got into the high-level cisterns of the East London district this year, but the charges for the high water supply were continued?—I think that it is not the fact. I think it did get into the high-level cisterns except in one or two cases, those were due as Mr. Bryan said, to the faults of the consumer and not to the faults of the Company.

17,957. (*Mr. De Bock Porter.*) But there are numbers of cases in which people have not been able to have baths, because their upper cisterns have not been filled. It is a matter of common knowledge in the East End of London?—That may be, I am only speaking from Mr. Bryan's evidence, for I have no knowledge of it myself except from Mr. Bryan's evidence. But certainly I understood Mr. Bryan's evidence to be that they did get it except in a few isolated cases. I have had no experience of it.

(*Chairman.*) We can put our own construction on Mr. Bryan's evidence.

17,958. (*Mr. De Bock Porter.*) It would be only on for two hours and they would not be able to fill them?—They would be filled up in less than two hours.

17,959. (*Chairman.*) Not if you have got to supply your own upper cisterns?—That depends.

(*Mr. Littler.*) Not if you have got all the lower taps running.

(*Chairman.*) No, not with all the lower taps running.

(*Mr. Littler.*) That is the condition of things in East London.

(*Witness.*) That is the condition of things the Company put forward as prevailing in the East End of London.

Mr. R. E. Middleton. (Mr. Littler.) That is, of course, not a condition of things for which the Company are liable.

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17,960. (Major-General Scott.) I should like to ask you this: if a certain set of pipes and mains carry a supply of water during 24 hours sufficient for the use of a certain population, and then the number of hours during which that water is turned on to these pipes is reduced to a quarter, would not the increased velocity which would result from the draft of water being all taken in six hours very much reduce the head compared with what it would be with a slower delivery?—I think we must go back a little first. The water is not delivered on the average of 24 hours. It is on the average of about 10 hours. The maximum delivery spreads over about 10 hours.

17,961. Are you speaking of constant supply?—Of constant supply. It is drawn almost at two periods in the day.

17,962. Does not every ball tap supply a cistern at any moment that it is necessary?—That is so.

17,963. It might be a mere trickle, but still the ball valve would always work?—Yes, certainly. There is no doubt that there would have to be a considerable increase of velocity in the pipes if the time is reduced to one-fourth, if you want to get the same quantity of water through, undoubtedly; but the time is not really reduced to one-fourth but to one-half; that is all. The delivery is at present given in 12 hours, and not in 24.

17,964. Of course the loss of head by friction would be increased enormously with the rate?—Yes.

17,965. It might be, perhaps, as the square of the velocity nearly, and therefore, a reduction of the hours of delivery would probably cause a considerable reduction in the pressure?—That would be perfectly true supposing that the whole delivery were given at once; but, of course, that is not so. The pressure is maintained by the district being divided up into small sections, and one section being supplied at a time, one for two hours and then the next section for two hours, and so on; so that the head behind it is maintained very much longer than it would be if they were all supplied at once.

17,966. That is so, no doubt, but still the general effect might be supposed to be a certain reduction?—I should say there would probably be a certain reduction, but nothing like the figures given. It would be on the basis of supply at the same time all round.

17,967. (Sir George Bruce.) Were not most of the pipes in London laid down on the basis of an intermittent supply originally?—They were certainly.

17,968. And these have been turned into a constant supply?—Yes.

17,969. Therefore, the pipes, in the majority of instances, were laid for an intermittent supply?—They were laid for an intermittent supply originally.

(Mr. Balfour Browne.) And the diameters of the pipes have probably increased since then.

17,970. (Sir George Bruce.) I know up in Hampstead we have only had constant supply for about six months, and the pipes were all laid, of course, for an intermittent supply?—Yes; that would be so.

(Chairman.) I do not know that there is anything more to ask you about the case of the Lea.

17,971. (Sir George Bruce.) You are not proposing to make any further exactions upon the Lea are you? You are not proposing to alter the law?—Not at all.

17,972. I mean the law which has hitherto up to to-day applied to the Lea?—Not in the least.

17,973. All the restrictions which were ever put on the Lea are proposed to be maintained?—Certainly.

17,974. Nothing more than that?—I have not suggested any alteration of that at all.

17,975. (Mr. Lewis.) Would these new storage reservoirs be for the purposes of the East London Company or the New River Company?—That I really cannot answer—for the purposes of the East London Company, I presume.

(Mr. Pember.) All the East London proposed reservoirs are for themselves alone.

17,976. (Mr. Lewis.) Then do you suggest anything in addition to that?—No, I do not suggest anything in addition to what the East London themselves will want. The New River have their first draught from the Lea before the East London.

17,977. But the East London are now engaged in constructing new storage reservoirs?—Yes.

17,978. Do you suggest anything in addition to that?—I believe they will themselves suggest something in addition to that. I cannot go beyond that.

(Mr. Balfour Browne.) To carry out Mr. Middleton's idea, it would require more than is at present proposed, I understand, and I think he answered his Lordship so.

(Witness.) Yes.

(Mr. Pember.) I do not suppose Mr. Middleton knows what our proposed powers in our Bill will be in the approaching session.

(Mr. Balfour Browne.) It is only what he said.

(Mr. Pember.) We propose 5,000,000,000 gallons storage above anything you have heard of at present.

17,979. (Chairman.) I have nothing more to ask you about the Lea. I understand you think the flow of the Thames might be reduced with safety and propriety below 200 million gallons a day at Teddington Weir?—Yes.

17,980. But have you assumed that flow of 200 million gallons a day at Teddington Weir in all your tables and calculations?—Yes, except in Tables 5 and 6.

17,981. Then I think we need not discuss that question. Do you think an increased flow would have a scouring effect on the river?—A very largely increasing flow; but nothing approximating to this. The 200 million gallons would have no effect more or less. It would require something like 1,000 millions coming over Teddington Weir to have any scouring effect at all.

17,982. Do you think it has at least a preventive effect. Do you think 200,000,000 gallons coming over Teddington Weir prevents sewage coming up the river?—Sewage does not come up there at any time, I think.

17,933. Then if there were no flow, the sewage would not come up?—I do not think it would come up as far as that. It would come up, and oscillate backwards and forwards to some extent, but there is always a flow coming down below between Teddington and Putney. There is something like 200 million gallons of fresh water coming in through the gravel into the Thames, at low times of the Thames.

17,984. Through the gravel?—Yes.

17,985. Not from any affluent, but from the gravel?—No from the gravel—partly from an affluent, perhaps.

17,986. Is that the gravel the Southwark and Vauxhall are pumping from?—No, not the same; it is the gravel on the Kew side of the river.

(Mr. Pember.) That is another company, the Lambeth Company.

17,987. (Chairman.) Does the Thames receive any affluent below?—Yes, the Brent, and the Duke of Northumberland's river, the Beane.

(Mr. Littler.) The Brent is drinkable now. Our engineer drank water out of the Brent in two places.

17,988. (Chairman.) I think you have some observation to make, although I am unable to see the relevancy of it, or the meaning of it, about Penton Hook and the limit of the Staines Reservoirs Act. I hope you will be able to make us understand it?—I state that the limit in the Staines Reservoirs Act of 1896 fixed at Penton Hook was made at an unnecessarily high figure in order to protect the existing pumping rights of the companies at Molesey; that is to say, so that (even if the limit of 200 million gallons at Teddington were made in the future for the first 130 millions), the pumping of that 130 millions would not be affected, so that they would be able to pump that without being affected by the Staines Reservoir.

17,989. Is the Staines Reservoir above or below Molesey?—Above Molesey.

17,990. Therefore, you must have, at Molesey, water enough, or you ought to have at Molesey, water enough to enable the companies who have their intakes there to pump 130 million gallons?—Yes.

17,991. And also to let 200 million gallons go over Teddington Weir?—That is so.

17,992. Therefore, you ought to get at Molesey at least 330 million gallons?—It is not quite that at Molesey, because there is a certain amount of—

(*Mr. Pope.*) At Penton Hook your Lordship means.

17,993. (*Chairman.*) No, I mean at Molesey. You say at Molesey how much, 330 million gallons; 130 for the companies, and 200 for the flow of the river?—Yes, but that is measured at Teddington, which makes a difference of about 10 per cent., that is all.

17,994. How do you mean, because water oozes into the Thames?—There are two or three affluents—three rivers coming in below.

17,995. What flow of the river do you want at Molesey in order to enable the companies to take 130 million gallons, and still to get 200 million gallons at Teddington Weir?—About 300 million gallons at Teddington.

17,996. No, I said at Molesey?—I beg your pardon. At Molesey I should have said about 300 million.

17,997. (*Mr. Pember.*) Are you accounting for the Mole which comes in?—Yes, I am allowing for that.

17,998. (*Chairman.*) There were two months in this year in which there were not 300 million gallons at Teddington Weir, and therefore much less at Molesey?—Certainly.

17,999. How much comes in between Molesey and Teddington?—According to these figures under these circumstances 30 millions.

18,000. I do not know what you mean by under these circumstances?—When the river is as low as this, about 30 millions, or about 10 per cent. of the whole flow of the Thames comes in there.

18,001. Where?—Between Molesey and Teddington.

18,002. Through the Mole?—Through the Mole and the Hogg's Mill.

18,003. Then I say, taking that 10 per cent. off, there were many months of this year when there were not 300 million gallons?—That is so, and that, of course, would have to be filled up from storage. That difference would have to be supplied from storage.

18,004. I wish I could follow your argument to show that the limit of the Staines Reservoirs Act is too high, but I am not able to do it?—It is unnecessarily high, because we have allowed for a margin of 20 million gallons between the two.

18,005. Between what two?—Between the 130 million at Molesey to be taken by the companies there, and the preservation of 200 millions at Teddington, and the limit we have fixed at Penton Hook.

18,006. The limit at Penton Hook is 200 million gallons?—The limit at Penton Hook is 300 million gallons.

18,007. No, no, unless we have been misled hitherto?—No, it is 265 at Bell Weir and 300 million at Penton Hook.

(*Chairman.*) I am sure that is not the evidence.

(*Mr. Claude Baggallay.*) As a matter of fact, my Lord, I may tell you it is 265 at Bell Weir, or 300 at Penton Hook, when Penton Hook Weir is constructed, or such other quantity as the Local Government Board shall determine to be equivalent to 265 million gallons at Bell Weir.

(*Witness.*) That is right.

(*Mr. Pember.*) Then Mr. Middleton is right.

(*Witness.*) Those are the conditions.

(*Chairman.*) That is not what we have been told before.

(*Mr. Claude Baggallay.*) I was arguing it on Friday.

18,008. (*Chairman.*) You, Mr. Baggallay, told us it was 250 million gallons at Penton Hook, except that until the Staines Reservoirs are completed, that limit did not apply. (*To the witness.*) Then you mean, I suppose, also that the 265 million gallons at Bell Weir is too high?—Yes, at Bell Weir—they are supposed to be synonymous terms.

18,009. However, it is the fact, is it not, that the limit imposed by the Staines Reservoirs Act does not come into operation till the Staines Reservoirs are completed?—No, my Lord, it does not, but at the same time we have no right to take any water in the meantime.

18,010. Have not you?—We have no power.

18,011. There, again, I have been misled. The impression left upon my mind was that the Southwark and Vauxhall could now draw the full quantity of 45

millions?—But that is under a different limit—not under the same limit at all.

18,012. Yes, 24½ millions under their ordinary powers and 20½ millions under the Staines Reservoirs Act?—No, my Lord, that is just it; it is not under the Staines Reservoirs Act.

(*Chairman.*) That we have been told.

(*Mr. Pember.*) It is under their Act of this year.

(*Witness.*) Under their Act of this year.

10,013. (*Chairman.*) Then under their Act of this year, if you please?—But their limit at Penton Hook is different from ours.

18,014. That is it, is it?—15 millions lower.

(*Mr. Pope.*) That is the 250.

(*Chairman.*) That is the 250, in my mind.

(*Witness.*) Yes, it is 250, as measured at Bell Weir.

18,015. The Southwark and Vauxhall, until the completion of the Staines Reservoirs, pump this 20½ million gallons without limit, and when the Staines Reservoirs are completed, they can only pump it when 250 million gallons goes over Penton Hook Weir?—It has nothing to do with the Staines Reservoirs; it is their own reservoirs.

18,016. Now, I have got that right, and it was my fault, no doubt. You have already told us that you think the daily limit is too severe on the Companies, and that they ought to have an average of six months?—I think it is unjust. I think it is a misrepresentation of fact. They are supposed to be able to get 24½ million gallons, and they cannot, as a fact, get it on the average of the year. They can only get it during the high months. Therefore it is a maximum, and not an average.

18,017. What sort of terms would you suggest, then, as limiting the powers of the Companies to draw from the Thames, as between them and the Thames Conservancy?—That there should be a gauging station, and that that gauging station should be at Teddington, and that a limit should be fixed, below which it should not be right for the Companies to pump water from the Thames; then that Teddington Weir, in order to meet this—it is merely as to works—should be reconstructed, so as to make the gaugings more reliable than they are at present; then that the payment to the Thames Conservancy for cleansing the river should be fixed on some known basis—a calculable basis; then that the water drawn should be managed by an amalgamated or joint board—that, in fact, the provision of water should be managed by a joint or amalgamated board.

18,018. But an amalgamated or joint board constituted how?—That, I think, is a matter for the Companies to decide for themselves, or a matter for Parliament to decide for them. I should say a similar board to that constituted for the Staines Reservoirs. A board of that description should decide how the water is to be distributed; how it is to be supplied; where it is to be got from.

18,019. I cannot follow your expressions. What do you mean when you say how the water is to be distributed. Do you mean how much each Company is to be allowed to pump at any particular time?—No; how much each Company is to get.

18,020. You mean to draw from the Thames?—Yes, from the Thames, or elsewhere—how much is to be allotted for the purpose of each Company from year to year.

18,021. (*Mr. Pember.*) That is your own private opinion?—That is my own private opinion, of course.

18,022. And you are limiting yourself to water over and above the 185½ million gallons?—Certainly, of course—and naturally.

18,023. (*Chairman.*) Do you mean to say that future Parliamentary powers, if any, of drawing from the Thames are not to be granted to any one Company in particular, but are to be granted to the whole of the eight Companies in such proportion as this board, that you suggest, shall determine. Is that it?—Yes, that is what I mean.

18,024. (*Major-General Scott.*) Do you propose to exempt from such revision the 130 million gallons that are now being taken without any limit whatever?—I am afraid I must. That is all. They have the powers,

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Mr. R. E. Middleton. and I cannot say anything against those powers. The powers are there.

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18,026. And you limit the action by Parliament to the mere surplus above 130 million gallons?—I do not limit it at all; but I suggest that they have the powers for the 130 millions, and whether they like to go to Parliament to alter those powers or not, is not for me to say.

18,027. (*Chairman.*) Then it amounts to saying that no company shall hereafter apply for powers to draw off for itself any more water from the Thames?—I think so, and that it should form practically an amalgamation of the companies for the purposes of getting water.

18,028. What would be the advantage of that?—Because they would be obliged—they would all go as one body. It would be an amalgamation for all practical purposes. It would not be an amalgamation of money, but it would be an amalgamation of interests so far as the provision of water is concerned.

18,029. What is the advantage of that?—Surely it means that every company would keep itself up to its proper level of efficiency, and that, if not, the Joint Board would see that they did.

18,030. But all those advantages would be still more safely secured if all the eight were in one hand?—I do not think they would be any more safely secured; they might be as well secured.

18,031. But you are now proposing a scheme of amalgamation of the companies for all the purposes of supply?—Yes.

18,032. And not for the purposes of dividend?—Not for the purpose of dividend.

18,033. (*Mr. Balfour Browne.*) Or for the purposes of charging?—Or for the purposes of charging.

18,034. (*Chairman.*) Supplying water—that is for the purpose of acquiring water and getting water. Is this a view that you are putting forward on behalf of the companies?—No.

18,035. Or is it simply your own speculation?—It is simply my own.

18,036. Then, I think, we will pass from it. Now you have got something to say about the daily limit?—That, I think, I have practically said already—that it works out unjustly, because it is impossible to fill up their reservoirs in the summer time.

18,037. That you have said?—That is how it affects them—that it is impossible to fill up the reservoirs again except so slowly.

18,038. I think you have already stated your view about the storage that will be required in dry years for this Thames water. You only allow some 10 inches for evaporation?—10 inches for evaporations—practically 10 per cent. of the total quantity for evaporation and bottom water.

18,039. On the other hand, you allow no extra space for cleaning?—No, my Lord, I do not think it is at all necessary, the quantity of deposit in the reservoirs would be so small that they might be run, at any rate, for 30 years without the deposit being at all appreciable.

18,040. You think, as I understand, that flood water could be taken after—I forget the number of days you gave us?—I think, as far as taking it into the reservoirs is concerned, it may be taken immediately.

18,041. Immediately?—It is merely an economical question as regards the filter beds, whether it should be taken or not.

18,042. Do you not think that the flood water carries a good deal of deposit with it?—No, as far as I can find out the quantity does not exceed the two grains per gallon that I have spoken of.

18,043. (*Major-General Scott.*) Would not the lower few feet in the reservoirs be much more loaded with matter in a state of suspension than in the upper parts?—I think I had explained that before. I think that as the reservoir is drawn down, so does the deposit sink with it—that the matter held in suspension would stand at a considerable height from the bottom when the reservoir was full, and as it was drawn down it would sink in proportion with the draft. It is kept by the pressure in the water itself.

18,044. As it is drawn down, would not the water with whatever it contained go down the supply?—No, we draw off, of course, from the top to begin with.

18,045. Yes, but then at the top there would be a certain quantity, the first six feet say, and the next six feet lower there would be a greater quantity, and the next six feet also a greater quantity still, and so on?—No, I do not think that is at all the correct way of looking at it. I believe that there would be no more in the second six feet than there would be in the top six feet; there might be a shade more in the next. I do not know, but I do not think so.

18,046. Has it not been your experience that in the subsidence of that sort of matter floating in water the rate of fall in the water becomes progressively less and less?—Certainly it is so—undoubtedly.

18,047. And that when the matter becomes collected together to a certain extent, which it does near the bottom of the reservoir within the lower six feet, the progress of subsidence is extremely small?—It is so, of course, naturally; but it has a different distance to fall. The distance in the first case is 30 feet. It gradually has only to fall a few inches to get the same result, and the time, therefore, may be slow, and still the same result may be obtained.

18,048. But if you had to rapidly run off your reservoir would not you find, when you got to the lower stratum of water, that that water contained a considerable quantity of matter compared with the water in the top portion of the reservoir?—No, I think not. You speak of running it off rapidly, the quantity that we could run off in a day is very very small. It is only a matter of inches. You see you have only, generally speaking, about 120 days' supply, and you have got 30 feet to do it in, so that you have got the number of inches that you can run off in a day as very small, and the number of inches that you run off does not increase much towards the bottom, because the bottom is nearly level.

18,049. (*Chairman.*) We have been told, at Question 8221, that for an increase of daily supply from 200 million to 300 million gallons (an increase of only 50 per cent.) the increase in the storage must exceed 180 per cent.?—Yes.

18,050. "And for an increase of daily supply of from 200 to 400 million gallons, an increase of only 100 per cent., the increase in the storage must be 4·20 per cent." What do you say to that?—That it is based on a mistake. For storage purposes the increase is only from 93 to 193.

18,051. From 93, what is this?—93 million gallons to 193 million gallons.

18,052. Now you advance that proposition with some confidence. What do you base it upon? Why is 93 million gallons the proper storage in order to supply 200 million gallons, and 193 the proper storage to supply 300 million gallons?—Because, on the average of the year, even taking this present year, there is always 93 million gallons to be obtained for supply purposes without storage; therefore for storage purposes—

18,052. What—there is always 93 million gallons to be obtained for supply purposes without storage?—Yes, on the average of a year.

18,054. To be obtained from—where do you mean—from the Thames?—Yes, from the Thames.

18,055. Do you mean pumped from the Thames on to the filter beds?—Yes, pumped from the Thames without depleting the Thames below 200 million gallons a day, and without storing there is 93 million gallons on the average of the year.

18,056. Do you say that is on the average of this, the driest year?—Yes, of this, the driest year. Therefore, there would be the difference between that and 130 million gallons to be stored. The difference is, therefore, not between 100 and 200 and 300, but between 93 and 193 and 293 millions.

18,057. Why 193? I cannot follow it?—That is simply adding on the quantity that you have to store, which is always the same afterwards. It is only in the first 93 million that you can supply without storage. All after that has to be stored—provision has to be made for storing the whole of it.

18,058. (*Mr. Pember.*) In fact, in all the higher amounts you add 130 minus 93?—130 minus 93.

18,059. (*Chairman.*) But 130 minus 93 is 37?—I beg your pardon. It is 93, then it is 100 in every case; for the next 100 storage you have to add the actual 100—for the next 100, 100 again. It is only in the first 93 as compared with the 130 that there is any difference.

(*Mr. Pember.*) I did not quite understand that last phrase myself.

(*Mr. Balfour Browne.*) Nor did I.

(*Chairman.*) I have no doubt it is our fault, Mr. Middleton, but I cannot understand it in the least.

18,060. (*Mr. Pember.*) Just state it again?—Taking the conditions of 1893 instead of 1898 you could always supply except for five million gallons, therefore the difference was not between 0 and 100, but as between 75 and 175 for a 300 million gallons' supply.

18,061. (*Chairman.*) You are now taking a different set of figures, are you?—It is simply the substitution of one year for another.

18,062. Do really stick to one year, because my head cannot follow you in this active saltation from one year to another. You gave me 1893 just now; do stick to 1898?—Very well.

18,063. You can always get 93 million gallons at the worst times from the Thames without storage?—Yes, from the Thames without storage.

18,064. Then go on with your explanation?—Then the comparison is between 93 and 193.

18,065. Why is it between 93 and 193? The question is, what is the increase in the supply from 200 million to 300 million gallons?—Then you have to store 193 million gallons of that instead of 300 million.

18,066. Go on in your own way?—You have to store 193 millions of that instead of 300 millions, and with 300 millions you have to store 93 millions of it instead of 193 millions.

(*Mr. Pember.*) That is right.

18,067. (*Chairman.*) Now, confining yourself to the 130 million gallons that the Companies are empowered to take, and assuming that they come under the same rules of storage as the whole supply, what is the quantity to be stored?—What is the quantity to be stored for 130 millions in the year 1898?

18,068. Have we got this already on some table?—
w17,774 Yes, it is on Table 4. It is 8,314 million gallons.

18,069. What would be the increase of storage when from that you go up to 300 million gallons?—300 million gallons is 30,468 million gallons.

18,070. That is also on the same table?—Yes.

18,071. Then I will not ask you about it, if it is on the table. Now, do you anticipate any deposit in the Welsh reservoirs?—There must be necessarily deposit swept down from the mountains into them.

18,072. What then?—That would be washed down into the deepest part. They are not flat at the bottom like the Staines Reservoirs; they run down to more or less of a point, and that deposit must be taken into that narrow place, and will, therefore, fill up considerably more space than it would in the Staines Reservoirs; but, on the other hand, it must be remembered that a considerable allowance is made in all such reservoirs for bottom water—a considerable depth allowance. It is not very valuable; but that would only take up space which is not otherwise valuable. It would not interfere with the water taken out.

18,073. (*Sir John Dorington.*) What is the general depth of the Welsh reservoirs?—The particular one in question, the Yrfon Reservoir, is 166 feet, I think, at the deepest point. At the draw off, I think it is about 80 feet from the top.

18,074. (*Chairman.*) As I understand, you would not shrink from flood water at any time in your storage of water?—No, I do not think there is any danger at any time in taking flood water into the reservoir.

18,075. Then you would make no limit at all—you would allow flood water to be drawn at once?—Yes, I should allow flood water to be drawn at once, leaving it entirely to the engineer to say if he would reject it from his filter beds. But that is only for his own purpose of getting his own filter beds clear. If he drew water from storage we should have to repump it again, but it might be repumped at once. The reservoir might be filled again at once.

18,076. Can you define a flood at all according to quantity?—For their purposes, the Thames Conservancy took a flood at 2,300 million gallons measured at Teddington Weir; but there are floods at all levels, and it is quite impossible, I think, to define a flood for any practical purposes.

18,077. Then you do not attach any importance to the view, that the first few days of the flood bring down a good deal of agricultural sewage?—I do attach importance to it to this extent, that the filter beds would have to be worked more slowly under the circumstances, but otherwise as regards putting that water into the reservoirs, I attach no importance to it. I think it might perfectly safely be put into the reservoirs.

18,078. Then is there no limit to it?—I think there is no limit to it.

18,079. You pump into your reservoirs water, however, infected with manure and farm refuse and sewage of all sorts?—I believe it is perfectly safe to do so. As regards the Thames, I am speaking of any pollution which might happen in the Thames.

18,080. (*Mr. De Bock Porter.*) Would not that involve the construction of additional filter beds?—No. If we wanted to reject the water for any time on account of the filter beds, we should take water out of store and fill the next reservoir to that the next day, taking it from, say, alternate reservoirs and refilling them on alternate days.

18,081. But if the water you refilled from the filter bed had more particles in suspension, would not you want a larger filtering area?—Probably you would, but with storage there is no necessity for that. You can take the cleaner water. You can bring it up to the proper quantity or proper condition by taking water from store.

18,082. (*Mr. Balfour Browne.*) That is, of course, entirely contrary to the report of Lord Balfour's Commission?—I think not.

(*Mr. Balfour Browne.*) As I read it, it is.

18,083. (*Major-General Scott.*) I presume you are aware that Sir Edward Frankland's theory is that the number of bacteria in the river water increases very largely during floods?—Yes.

18,084. After rainfall which is synonymous with floods?—Yes.

18,085. And is it not the case that practically the number of bacteria in the filtered water bears some proportion to the number of bacteria in the unfiltered water?—That is so, there is a slight increase for a larger number.

18,086. There is a percentage of elimination, and that does not increase when the water is in a state of flood?—That is so.

18,087. The percentage remains about the same?—About the same.

18,088. Therefore that implies that there would be a larger number of bacteria in the filtered water if flood water is introduced into the filters?—I think flood water always has been introduced into the filters up to the present and it necessarily must be so.

18,089. But, still, the result has been, generally speaking, an increased number of bacteria when flood water has been filtered?—That is naturally so.

18,090. That is compared with the number of them when water that is not flood water has been filtered?—That is so.

18,091. (*Chairman.*) That seems to be an admission which is rather fatal to your theory?—I do not think so, my Lord; I said that I should not object to putting the water into the reservoirs.

18,092. What becomes of the bacteria?—They subside. In a very short time there is something like 80 per cent. of the bacteria in reservoirs that subside to the bottom.

18,093. They subside?—They subside, ycs.

18,094. Do they live, or do they die?—I presume that they die; they do not appear again.

18,095. But they must be there—do not they multiply?—They do not appear again. They subside permanently. Sedimentation is one of the most rapid methods of getting rid of bacteria, short of filtering.

18,096. But that is not consistent with what you have just admitted to Major-General Scott. The more

Mr. R. E. Middleton. flood water which goes into the reservoirs, the more bacteria there is in the resulting filtration of that water?—No, that is not the question General Scott asked me. He asked me if it were put direct on to the filter beds. If it is put direct on to the filter beds, that is so; but if we take the water from the reservoirs on to filter beds—of course, that is pure water—that is to say, water out of the reservoirs pretty free from bacteria. They have already had time for sedimentation. I say that if the engineer considers that his filters would be over-pressed by taking in that flood water at once, we should reject that flood water from the filter beds, turn water from the reservoirs on to the filter beds, and then refill the reservoirs the next day.

18,097. (*Major-General Scott.*) In that case you depend very largely upon the effect of subsidence for the purification of the water?—To a certain extent, but, of course, that water would probably have been standing there for months, or for weeks, at any rate, beforehand, and the effect would practically have been produced.

(*Mr. Pember.*) I do not know what evidence the other Royal Commission had before it, but paragraph 146 deals with this question.

(*Mr. Balfour Browne.*) There are a large number dealing with it.

(*Mr. Pember.*) It says:—"There are, moreover, numerous conditions which lead to the destruction or elimination of the pathogenic bacteria during the flow down the stream, and afterwards during the sojourn of the water in the subsidence tanks, and during the process of filtration; so that it is extremely doubtful, to say the least, whether a single one of these pathogenic bacteria will remain in the water as delivered to the consumer, or even in the unfiltered river water itself: that in spite of frequent examinations none have ever been detected in it," and so forth; but these are the words to which I wish to call your attention, "or even in the unfiltered river water itself."

(*Mr. Balfour Browne.*) You must read it in connexion with the parts where the Commission condemned the taking in of the more turbid river water.

(*Chairman.*) Yes.

(*Mr. Pember.*) The only thing I can find about that is on page 56 in paragraph 135:—"The taking of the water should be under regulations similar in character to those suggested for the Thames."

(*Mr. Balfour Browne.*) Go on, please.

(*Mr. Pember.*) "Namely, the first flush of floods to be rejected."

(*Mr. Balfour Browne.*) It is higher up in 134, you will find, and also on the last page they speak of rejecting the more objectionable part of the flood water.

(*Mr. Pember.*) They do not say that. They say: "We believe this can be done without taking in the more turbid of the flood waters."

(*Mr. Balfour Browne.*) But Mr. Middleton says there is no objectionable part—there is no objection to any part of the flood.

18,098. (*Chairman.*) But where in the world do the bacteria come from that have been taken into account in the analysis we have had before us. We have had 1,600 odd bacteria per cubic centimetre. Where do those come from?—From the Thames.

18,099. Had that water been in a reservoir?—That water had not been in a reservoir, to the best of my knowledge.

18,100. It had come direct from the Thames, do you think?—Direct from the Thames on to the filter beds.

18,101. If it had been in a reservoir, do I understand you to say that this 1,600 bacteria per cubic centimetre would have subsided to the bottom and perished?—A certain proportion of them.

18,102. A certain proportion of them, but how many?—It depends upon the time—upon how long they have been stored—as many as 80 per cent., according to the length of time, and the length of time varies from about four days upwards.

(*Mr. Balfour Browne.*) The number of microbes his Lordship gave was in filtered water.

(*Witness.*) I am perfectly aware of that fact.

(*Chairman.*) Yes.

(*Mr. Pember.*) Paragraph 146 deals with the unfiltered water.

18,103. (*Major-General Scott.*) Would you limit the abstraction of water for conveyance to the filters direct?—I would not limit it, except by the experience of the engineers. I do not think there is the slightest necessity to limit it.

18,104. A large proportion of the water out of this 300 million gallons is taken direct from the river, and brought down to the filters?—Yes.

18,105. You would not fix any limit to the take of water, and its transfer directly to the filters in that way?—I do not think that any useful test could be made. I think the judgment of the engineer would be far more reliable than any hard and fast rule that could be laid down for the purpose. I think that hard and fast rules of that description are apt to lead to injury rather than benefit.

(*Chairman.*) Please say yourself what more you want to say about the percentage of storage.

18,106. (*Mr. Balfour Browne.*) Is this 93 and 193?—Yes. It is simply this, that under the conditions of 1898, an increase of supply from 200 to 300 million gallons daily is for storage purposes. From 93 to 193 million gallons, or 207½ per cent., while the increase of storage is only 182½ per cent. The storage in this case increases at a less rate than the supply.

18,107. (*Chairman.*) You must be good enough to explain that, because I do not understand it in the least. An increase, you say, of supply from 200 to 300 million gallons daily is for storage purposes. From 93 to 193 million gallons—what do you mean by that—"is for storage purposes"?—That you have only to store the difference between 93 and 200 million gallons.

18,108. But the difference between 93 and 200, is not 193, but 197?—No, that is between the next. 93 and 193 is for 300. For 200 million gallons for storage purposes, you have to store 93 million gallons. The rest you could get direct.

18,109. Does this sentence that you have just read mean that if you had got to supply 200 million gallons a day you have got to store 93 million gallons a day?—Yes.

18,110. A day?—A day on the average.

18,111. On the average, if you are going to supply 300 million gallons a day, you must store 193 million gallons a day?—That is so.

18,112. That is what it means?—Yes, that is what it means.

18,113. (*Mr. Pember.*) Surely it ought to be 137?—No, it is perfectly right.

18,114. (*Chairman.*) I do not know what it ought to be. I can only take what Mr. Middleton says?—It is all right.

18,115. I do not understand it in the least. I am only taking it from him as if he were a prophet. Then you go on to say: "While the increase of storage is 182½ per cent."—what does that mean? You have got to store 207½ per cent. more than you did when you were only supplying 200 million gallons a day. What do you mean the increase of storage?—We have got to supply 207½ per cent., but we have got to increase our storage by 182½ per cent to do it.

18,116. Could you put that into plainer English. Do you mean that you have to pump into your storage reservoirs 207½ per cent. more, but the area of your storage reservoirs is only increased by 182½ per cent. Is that what you mean?—No, that is not what I mean.

18,117. Then, do tell us what you mean?—You have to supply 207½ per cent. more.

18,118. Supply to whom or where?—To the districts, to the companies. The supply is increased from 93 to 193 million gallons.

18,119. No, no; the supply is increased from 200 millions to 300 millions?—Yes, but the supply for storage purposes—the supply that you have to get from storage—increases from 93 to 193 millions.

18,120. Now, you are putting a different meaning upon the supply for storage purposes you mean, not that you have got to put that difference of quantity into your storage reservoirs, but you have to draw that quantity out?—You have to draw that difference out.

18,121. You said just the reverse just now?—I am sorry.

(*Mr. Pember.*) May I be pardoned for putting it right.

(*Chairman.*) Do anything to make it intelligible.

18,122. (*Mr. Pember.*) As I understand, Mr. Middleton means to say he can draw 93 out of the first 130 millions without storage?—No, it is the other way about—it is the difference.

(*Chairman.*) I am so glad to find you do not understand it.

18,123. (*Mr. Pember.*) You have been saying up to the present time you can draw 93 without storage?—No, it is 37.

18,124. (*Chairman.*) I will make another attempt to put it into language that I understand. If you supply 200 million gallons a day, and the year is a year like 1898, you will have to draw on an average from your storage reservoirs 93 million gallons a day?—That is so.

18,125. That is right, is it?—That is right, my Lord.

18,126. On the other hand, if you have to supply 300 million gallons a day, and the conditions are like those of 1898, you will have to draw 193 million gallons a day from your storage reservoirs?—That is so.

18,127. That is what you mean. On the other hand, you say that the difference of storage area?—Storage capacity.

18,128. Well, storage capacity—I will take any word that I can understand—the difference of storage capacity for those two supplies of 200 million and 300 million gallons is only 182½ per cent.?—That is so.

18,129. But you have not given us the figures at which they are in the two cases. I suppose they appear in your tables?—They can be taken off Table 4.

18,130. (*Sir George Bruce.*) This increase of storage, required from 200 millions to 300 millions on the basis of the year 1898, is 16,710 millions for 200 millions, and 30,468 millions for 300 millions?—That is so.

18,131. (*Chairman.*) Those are exactly the figures on that table?—Those are exactly the same.

(*Chairman.*) Then we need not take them over again.

18,132. (*Mr. De Bock Porter.*) Would you tell me why the excess of storage required under the conditions of 1898 over those of 1893, decreases from 9,811 for a supply of 200 million gallons of daily supply to 4,435 for a supply of 400 million gallons of daily supply?—Because the drought is nipped off more sharply than it is in the year 1893, and the consequence is, that the worst part of the storage is when a supply of 190 million gallons was given. There is more storage required in comparison at that time than at any other time, and so on. If the storage was increased so, it would continue to increase.

18,133. Then the drought of 1893 extended over a longer period?—Over a longer period.

18,134. And was not so excessive in the earlier part?—Was not so excessive in the earlier part. You will see, I think, the effect of that in Tables 3 and 4. In the one case there is 137 days, and in the other, 195 days.

18,135. (*Chairman.*) If you have got anything more to say about the flow of the Thames, please say it?—With regard to the flow of the Thames, I think that this year has proved effectually that the limit at Teddington might be considerably reduced.

18,136. You have told us that already?—Yes, but I think that this year has proved it very much more strongly.

18,137. Why has this year proved it?—Because it has been down to a lower limit by 100 million gallons than in any other year before, and there has been no injurious effect upon the Thames, so far as I know.

18,138. No injurious effect?—No injurious effect. There has been no complaint, to the best of my knowledge, of any injurious effect to the Thames, or to any person using the Thames. Then, I think, it might be useful to compare the flow of the Thames and the amount of supply which we propose to take from it with that given by many other reservoirs.

18,139. By many other reservoirs?—Yes, by other reservoirs. The lowest point to which the Thames reached was 175 million gallons for one day's natural flow.

18,140. The lowest point for this year?—Yes. The natural flow of the Thames was 175 million gallons for one single day. The quantity that we propose to take here is 400 million gallons a day; therefore, the supply is a little over twice the minimum flow—as 16 to 7. But in many reservoirs the quantity supplied will be as much as in the proportion of 23 or 24 to 1, or even higher.

18,141. In many of the reservoirs?—I will take the case of the Wye reservoir, for instance. The natural flow of the Wye Reservoir fell this year a little under 2 million gallons a day.

18,142. I must ask you to explain that a little. What do you mean by the natural flow of the Wye reservoir?—The natural flow of the river Wye, at the site of the reservoir—at the proposed reservoir, fell to a little under two million gallons a day; that reservoir is intended to give a supply, irrespective, I believe, of compensation, of 43 million gallons a day; therefore, the proportion is as 23 to 1, whereas from the Thames, we only propose to take a quantity which is represented by 16 to 7, or nearly 2 to 1.

18,143. You propose to take from the Thames, how much—how many million gallons a day?—400 million gallons at the present time.

18,144. (*Mr. Balfour Browne.*) The Wye reservoir is intended to give compensation as well as supply?—I said so, I said the proportion would be very much larger, therefore. The proportion really would not be 23 to 1, but about 28, 29, or 30 to 1.

18,145. (*Chairman.*) So that your argument is that if you can take from the Wye—give me the proportion again?—30 times the worst dry-weather flow.

18,146. In the worst dry-weather flow it is perfectly safe to taken from the Thames 16/7ths. of the dry-weather flow?—16/7ths. of the dry-weather flow.

18,147. (*Major-General Scott.*) What is the ratio between the minimum flow of the Wye and the maximum flow in the flood.—It is very large; I could not tell you at the present moment, but I know it is as much as 125 millions.

18,148. That would be a ratio of what?—62 times.

18,149. What is the ratio of the minimum flow of the Thames to the maximum flow?—The maximum flow, I think, is 15,000 millions.

18,150. Of the Thames?—The maximum flow is 15,000 millions.

18,151. Nothing like that, is it, that has ever been registered?—It is given in the papers as being 20,000 millions, but I think the highest that has been registered is 15,000 millions.

18,152. (*Mr. Balfour Browne.*) Do you mean in 24 hours?—In 24 hours.

18,153. I am told it is 75 to 1 in the case of the Thames, and in the case of the Welsh streams about 1,000 to 1?—I know it is.

(*Mr. Balfour Browne.*) That is the maximum compared with the minimum; the difference of rainfall, of course, in the two districts is very great.

18,154. (*Major-General Scott.*) I was under the impression that there was an enormous difference in the ratio, and, of course, that affects the argument in regard to the proportion you can take?—Undoubtedly.

18,155. And also the lowest flow of your reservoir?—Certainly, I quite agree with that; but the other is, nevertheless, I think, a strong argument. There is not the difference in the proportion that would make the argument a very weak one—30 to 1 and 2 to 1. This is in 1898. I did not hear your figure.

(*Mr. Balfour Browne.*) 1,000 to 1.

18,156. (*Mr. Pember.*) I thought you said it was about 185 millions in flood as to the Wye?—The highest I remember was 125, but I have not got the figures before me. It may have been higher.

18,157. That is only 62½?—That is only 62½; but there may have been other figures which I have not got at the present moment.

18,158. (*Major-General Scott.*) I have seen it stated that in some of those streams that feed the Liverpool reservoir the ratio is 1,000 to 1?—I dare say it is quite possible. I dare say I can find the figures, and I shall be quite willing to produce them if I have them.

18,159. (*Sir George Bruce.*) In both cases it is a question of storage to make up for the deficiency in the

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Mr. R. E. Middleton. period of smallest supply?—Yes, certainly, that is what it is.

28 Nov. '98 18,160. (*Chairman.*) Can you give us accurately the way in which the existing 866 millions of gallons of storage is now distributed. I am not sure that we have that?—I think that I gave it to you last time—the Southwark and Vauxhall 136 millions.

18,161. (*Mr. Balfour Browne.*) Is that existing to-day?—Existing to-day. Then Lambeth, 125 millions; East London, 5 millions at Hanworth; West Middlesex, 397 millions; Grand Junction, 64½ millions; and Chelsea, 140 millions. I think there is a difference of 1½ millions.

18,162. (*Chairman.*) Where is the New River?—The New River has got nothing on the Thames at present.

18,163. Here you have only given us six companies?—That is all.

18,164. The New River has none, and the Kent Company?—And the Kent—they have nothing—no storage reservoirs.

18,165. You have given us 867½ millions?—867½ millions, I think it is.

18,166. That is existing storage capacity now at work?—Now at work.

18,167. That, of course, does not include the Staines reservoirs in the least?—It does not include the Staines or the constructing work of the Southwark and Vauxhall, much of which is completed, equal to 327 million gallons.

18,168. Yes; but can you tell me before I get any other figures from you, whether the cost of any other storage than these 867½ millions has got into the capital accounts of the companies as yet?—As debentures, certainly. As debenture charge it amounts to, I think, about 600,000*l.*

18,169. Then tell me what additional storage is either constructing or constructed, and which appears in the Company's accounts. I do not want money to be raised and levied hereafter?—There are 327 million gallons of storage of the Southwark and Vauxhall, along with filter beds.

18,170. I did not ask you about filter beds but storage reservoirs, please?—The Lambeth, 335 million gallons constructing. Then there are the Staines reservoirs for 3,300 millions.

18,171. I should like to keep the Staines reservoirs distinct, if you please, because that belongs to three companies. Can you give us the others separately?—You have got them all.

18,172. Nothing about Chelsea?—It is very little.

(*Mr. Rickards.*) Chelsea are constructing reservoirs now at the present time to hold 50 million gallons more. They are increasing their storage.

(*Chairman.*) Does the cost of that appear in the tables we have had of their debenture capital?

(*Mr. Rickards.*) No, not those you have had.

(*Chairman.*) You see my object?

(*Mr. Rickards.*) Yes.

(*Witness.*) I have those of the Chelsea reservoirs here, but I did not give you the figure because there is nothing expended on them.

18,173. (*Chairman.*) If their cost has not appeared in the capital account, I do not want to have it. Then there is nothing else except the Staines?—Nothing but the Staines.

18,174. That is 662 millions?—That is 662 millions.

18,175. Now give me Staines?—Staines is 3,300 millions.

18,176. Constructed, or constructing?—Constructing.

18,177. (*Sir George Bruce.*) Have you got any powers beyond that?—Beyond the 3,300?

18,178. Yes?—No.

18,179. Are you applying for any this year?—No, not this year.

(*Mr. Pember.*) Would it not be safer to take these figures from the engineers of the separate companies—from those who know them accurately?

(*Chairman.*) Do you mean to say that they are not accurate?

(*Mr. Pember.*) I do not say they are not accurate, but I have my suspicion that some of them are not right.

(*Chairman.*) If you can agree to a Table, which you can hand in, I will trouble Mr. Middleton no further.

(*Mr. Balfour Browne.*) Would it be possible to have what the storage was in 1892, when Lord Balfour's Commission reported, because I believe there has been some increase in those figures Mr. Middleton gave us, since that date.

(*Mr. Pember.*) I think you will find that in their own report.

(*Witness.*) The West Middlesex is increased, of course; all that is new since then.

(*Mr. Balfour Browne.*) They only report that it is quite inadequate as to storage, but they do not say the amount.

(*Mr. Pember.*) I think they do.

(*Mr. Pope.*) I think you may take it that all the recent figures you have given have been since that Commission, and no doubt the applications to Parliament were stimulated by that report.

(*Mr. Balfour Browne.*) Yes. I only wanted to know how much they have got since then.

18,180. (*Chairman.*) In your tables you have put in to-day, you have deducted as your existing capacity 867 million gallons?—Yes.

18,181. Whereas, according to you, there is 867 millions of gallons and a half more—I will not trouble you about that—and 662 which are already not only authorised, but constructing?—Yes.

18,182. And which figure in the capital account of the Company?—Yes, and the Staines Reservoir constructing as well.

18,183. The Staines Reservoir is a part. Do keep your mind upon the point, please. So that it is not a deduction of 867 millions that you should have made, but a deduction of 1,500 and something?—Yes.

18,184. Then why did not you deduct the right figure?

(*Mr. Balfour Browne.*) But that is not all.

18,185. (*Chairman.*) It is capital raised and it appears in the list of debentures, as I understand?—Yes, some of it.

(*Mr. Pember.*) I think we had better give the authoritative statement.

(*Chairman.*) Very well.

(*Mr. Pember.*) That is a statement of the amount of storage plant actually existing and capital raised to meet it.

(*Witness.*) I quite understand your point.

18,186. (*Chairman.*) You see, Mr. Middleton, we have spent an enormous number of hours trying to define what expenditure would be necessary to bring the existing storage system up to the Staines conditions?—Yes.

18,187. Capital that has already been raised and applied to the construction of additional reservoirs ought not to be included in that?—I quite agree with that, but I understood that you wished it to be in this form, and therefore I put it in this form.

18,188. I wish to have it in a form in which it is useful. Then we will await the statement.

(*Mr. Pember.*) On page 24 of the Report of Lord Balfour's Commission you will see the list of subsidence reservoirs, and their capacity given.

(*Witness.*) Shall I give you the Staines now?

18,189. (*Chairman.*) There are 3,300 million gallons of storage there?—3,300 million gallons of storage, and there has been about 200,000*l.* spent upon that.

(*Mr. Balfour Browne.*) Out of a million.

18,190. (*Chairman.*) Out of a million and a half, is it not?—Out of a million and a quarter.

18,191. We have got the figures of the Staines expense, I think, out of a million and a quarter, and that avails for the benefit of three companies only?—For the benefit of three companies only.

[Adjourned to to-morrow at 12 o'clock.]

THIRTY-EIGHTH DAY.

Tuesday, November 29th, 1898.

Guildhall, Westminster, S.W.

PRESENT :

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Honourable JOHN WILLIAM MELLON, Q.C.,
M.P.
SIR GEORGE BARCLAY BRUCE, Kt., O.E.

ALFRED DE BOCK PORTER, Esq., O.B.
Major-General ALEXANDER DE COURCY SCOTT, R.E.
ROBERT LEWIS, Esq.

CECIL OWEN, Esq., Secretary.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River Company.
Mr. Liffiter, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. REGINALD EMPSON MIDDLETON recalled and further examined.

Mr. R. E. Middleton.

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(Mr. Pember.) Mr. Middleton has got your figure, my Lord, about the highest flow of the Wye as compared with the lowest. There was some talk about its being 1,000 to 1, or something of that kind. He has got the figure now, and also he has got a couple of diagrams which I think he wants to give you, which perhaps is not quite so pleasant a piece of information, but which refer to his Tables 2 and 3, which were handed in at Questions 17,747 and 14,936. He thinks they will help you to understand the tables.

18,192. (Chairman, to Witness.) What is it you have to say about the Wye?—The highest reading of the Wye that I have is 734,500,000 gallons per day; the lowest reading is 1,872,000 gallons, and the proportion is 1 to 392.

18,193. (Major-General Scott.) Perhaps you had better repeat now the Thames ratio?—The lowest reading of the Thames was 175 million gallons, and the highest 15,000 million gallons, and the proportion is 1 to 88.

18,194. (Mr. Pember.) Where were the gaugings taken: first, where was the Wye gauging taken?—Near the site of the proposed reservoir on the upper Wye.

18,195. And the gauging on the Thames was taken at Teddington Weir, was it not?—Yes.

18,196. (Chairman.) The inference you draw from those figures, I suppose, is that in a season where the Thames is likely to fail, the Wye is much more likely to fail?—That is scarcely the inference I wanted to draw, though that is one of the inferences to be drawn. The amount of water that we propose to draw from the Thames is far less in proportion than that which it is proposed to draw from the Welsh stream.

18,197. (Mr. De Bock Porter.) Is not the rainfall in the Welsh area very much larger than that in the Thames?—That is so, but then the area is very much smaller.

18,198. (Mr. Pember.) The watershed, you mean, is much smaller?—The watershed, the drainage area is.

18,199. (Mr. De Bock Porter.) But the rainfall is very much larger?—Very much.

18,200. (Chairman.) Forgive me, I do not quite see how the figures you have given us lead to that last inference you have drawn. You compared the proportion proposed to be drawn from the Thames to the lowest flow of the Thames, and the proportion to be drawn from the Wye to the lowest flow of the Wye, in

order to raise the inference that you wish?—Yes, that is what I said yesterday—when I did draw a proportion—that the one was as nearly 2 to 1 for the Thames, and as 23 to 1 for the upper Wye, irrespective of what might be given for compensation, which would raise it to about 28 to 1.

18,201. (Mr. Mellor.) What difference is there in the amount of rainfall?—The amount of the rainfall, I presume, on the upper Wye would be about 54 to 60 inches a year, I could not say exactly which, and in the Thames it is about 28 inches.

18,202. (Chairman.) I think we finished the subject of storage yesterday?—May I be allowed to put in these two diagrams to go with Tables 2 and 3; I forgot them yesterday. (The Witness handed in Diagrams A and B. See "Maps, Plans, and Diagrams.")

18,203. Will you explain these diagrams, please?—The first is merely in diagrammatical form, Table 2, showing the quantity of water to be drawn from the Thames in any given year. The upper line represents the total supply from all sources, the lower line the supply to be given from the Thames.

18,204. (Sir George Bruce.) This is on the basis of population, according to the Balfour Commission Report?—Yes.

(Mr. Pember.) And, of course, based also on General Scott's Annual Report for 1891. There are two sets of lines, you will see, sir.

(Chairman.) It is based on the two figures of population in the Balfour Report.

(Mr. Pember.) Yes, on the two.

18,205. (Chairman.) What is the second diagram?—That corresponds with Table 3, and it shows the construction of the reservoirs on the basis of 1893; the curve of storage required and the construction of each, the date that each reservoir will be commenced, and when it will come into supply.

18,206. (Mr. De Bock Porter.) Has any calculation been made with reference to the ultimate cost of these reservoirs and the ultimate income which it is assumed may be derivable?—Not the income; I have not gone into that question; but the ultimate cost is contained in the tables that were put in yesterday.

18,207. Yes, but some estimate has doubtless been formed of the increase of income which will accrue from the increase of population?—I did go into that

Mr. R. E. Middleton. figure at one time, and I thought that it would be probably so fallacious that I did not proceed further with it. Of course, if it is calculated on the basis of the present time, it is perfectly easy to find out what the income would be.

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(*Mr. Pember.*) One very rough rule of three, so to say. Supposing the income of the companies to be a million now, and the population 4 millions, what will it be when the population is 12 millions? It will be, as 4 is to 12, so is 1.

18,208. (*Chairman.*) Do you mean that it is quite fallacious to estimate any prospective increase of revenue of the water companies?—No, that is not at all my meaning. Whether it would be a higher or a lower one I am not prepared to say. That is to say, whether the proportion of gross revenue to net revenue would remain the same, I am not prepared to say.

(*Mr. Pember.*) You have to consider that, and, of course, you would have to consider the quinquennial valuation.

18,209. (*Chairman.*) Yes. One important question for any purchaser, or any arbitrator who decided about purchase, would be whether or not there is a reasonable prospect of increase of income in the future?—Certainly; that one would naturally consider.

18,210. You say that no reliable calculation can be made upon that subject?—I do not think so. I have made one, but I was not satisfied that it was reliable, and, therefore, I did not go on with it.

18,211. So that an arbitrator would be wrong if he assumed that there was a prospective increase of revenue?—Not necessarily; but there might be.

18,212. (*Mr. De Bock Porter.*) Do you think it would be a sanguine estimate to assume that the increase which may be looked for will be sufficient to remunerate the companies for this expenditure upon the whole of this undertaking?—I am perfectly certain it will do that.

18,213. It will do that?—It will do that, certainly.

(*Mr. Pember.*) By a simple rule of three sum, it would do a great deal more than that.

(*Witness.*) It will do that, with a great deal to spare.

18,214. (*Major-General Scott.*) You mean with expansion?—With ordinary expansion, at the same rates as at present.

18,215. With the Thames as the basis of supply?—Yes.

18,216. Is it your argument that the expansion on the basis of the Welsh Scheme would be very unprofitable, or unprofitable at all, or remunerative? What does your argument mean?—It would not be profitable, at any rate for a very long period.

18,217. (*Mr. De Bock Porter.*) The great difficulty about the Welsh Scheme, I presume, is the large expenditure that will have to be made before there is any return whatever?—That is so; and the small amount of remuneration, when the remuneration does begin, in comparison with the expenditure.

18,218. But, still, yesterday you assumed that the time would come when London would have to go to Wales?—I think not. I said that it might have to do so; but I put it off for a very great number of years. It will have to grow up to such a city as nobody ever heard of before, before that became necessary.

18,219. (*Mr. Mellor.*) But surely London is a city that nobody ever heard of before?—Yes; but it will have to be one which nobody has ever even contemplated. You see there is enough in the Thames and the sources I have mentioned to go on to 18 millions of population.

(*Mr. Pember.*) Of course, if London goes on *ad infinitum*, the water supply must too; and, at last, we shall learn to drink sea water.

(*Witness.*) We shall probably spread out so far, that we shall have to take in Cumberland and Scotland.

18,220. (*Chairman.*) To sum up the advantages of your Thames Reservoirs Scheme, you say that they can be constructed one at a time, as required?—Yes.

18,221. And that they will become remunerative shortly after the commencement of their construction?—Yes.

18,222. I gather from your figures that you think that each instalment of the reservoirs will cost about 800,000*l.*?—Yes, that is my estimate.

18,223. (*Sir George Bruce.*) What is the capacity of that?—3,600 millions.

18,224. (*Chairman.*) Those instalments, constructed in that way, from time to time, will afford at the driest season a supply of how much?—To begin with, of 40 million gallons from each reservoir, and towards the conclusion, of about 20 million gallons. I think 23 million gallons is the correct figure.

18,225. That is as the supply gets towards 400 million gallons a day?—Yes.

18,226. On the other hand, the disadvantage of this Staines Scheme is, that all the water drawn from these reservoirs in the Thames must be pumped?—Yes, it must be pumped.

18,227. (*Sir George Bruce.*) I do not follow your figures?—Each reservoir will yield, to begin with, a flow of 40 millions; but when it approaches the supply of 400 million gallons a day, the quantity which will be yielded by each reservoir becomes less, and comes down to about 23 millions as a matter of fact—getting down to about 20 millions at the end.

18,228. But it holds 3,600 millions altogether?—Yes; but the quantity that you can give as a supply from it becomes less as the time goes on; each reservoir will only give a less supply as the battery of reservoirs, the number of reservoirs increases, that is to say, as the supply increases.

18,229. (*Chairman.*) Could you give us some short and intelligible reason for that?—Because the number of days in which you can pump into those reservoirs is reduced as the supply is increased.

18,230. Not the number of days in which you can pump into them, but I suppose the total quantity you can pump into them?—No, the number of days is decreased, and also the number of days when you have to supply from them is increased.

18,231. Why is the number of days that you can pump into them decreased?—Because, as you go up, if you take a section of the river, the river is a line something like *that* (describing), and when you pump from the line up *here*, the number of days obviously becomes fewer in a curved line.

18,232. (*Mr. Pember.*) You mean the amount of water to be dealt with is smaller?—The amount of water is smaller, and also the number of days when you get it is fewer.

18,233. I see, first, that the volume of water that has to go up is smaller, but I do not quite see why the number of days is smaller?—Because, as you go up, the distance from the time of drought to the time of flood extends for a longer period, the line is always more or less a curved line, and if you cut it off at that section, which shows 200 millions, you have got a distance from *there* to *there*, but if you put 100 million gallons more on, the distance is from *there* to *there*. and it is so much longer, during which you cannot pump.

18,234. (*Chairman.*) Do you contemplate these successive reservoirs being put higher and higher up the river?—No, not at all; they may be, some of them, lower down.

(*Sir George Bruce.*) I think you had better abstain from referring to a curve; engineers may understand that, but perhaps not others.

(*Mr. Pember.*) Mr. Eaton has just told me this, and I understand that is it; he says the reservoirs are not higher up, but what Mr. Middleton means is that they are at a higher elevation.

18,235. (*Chairman to Witness.*) Is that what you mean?—No. The reservoirs are not at a higher elevation, they are just at the same elevation, or some of them may be even lower; but the elevation of supply, the quantity that you have to supply, rises up on the curve of the river here, and, therefore, the distance between the points is greater, and there are fewer days when you can pump.

18,236. How can the digging of a reservoir on the bank of a river diminish the number of days when you are capable of taking water from it?—It does not make any difference to the number of days; it is the increase of supply that limits the number of days, you have so many days when you have to take so much water from the river, and, therefore, there are so many fewer days when you can pump out of it.

18,237. (*Mr. De Bock Porter.*) Is not the filling also governed by the size of your intakes; do you propose

to have additional intakes as you go on?—We must, naturally; we could not possibly fill them without.

18,238. (*Chairman.*) Contrasting the Welsh Scheme with what you have just said about the Staines Scheme, the advantages of the Welsh reservoirs are that the water will come from practically uncultivated land?—These are the advantages claimed for the Welsh reservoirs, that they will come from practically uncultivated land.

18,239. Secondly, it will be soft water?—The water will be soft.

18,240. And, thirdly, it can be supplied to the greater part of London by gravitation?—That is so. With regard to the question of the softness of the water, whether that is such a great advantage or not is to some extent problematical; for some purposes it is advantageous, undoubtedly—for manufacturing purposes, for instance—but for dietetic purposes, I should doubt it.

18,241. On the other hand, you allege it as a disadvantage to the Welsh Scheme that it is more costly?—It is more costly.

18,242. Secondly, the sum to be expended will be unremunerative for a longer time?—Yes.

18,243. Thirdly, do you see any disadvantage in relying upon aqueducts of 150 to 176 miles for the supply of the Metropolis?—It seems a little dangerous to rely upon one aqueduct for such a large proportion of water, but, of course, it has to some extent been done in other cases; and Manchester does rely, to a considerable extent, on a supply from Cumberland.

18,244. (*Major-General Scott.*) But ultimately there are to be two aqueducts?—Ultimately, but not till the second instalment is introduced, as I understand.

18,245. (*Sir George Bruce.*) The two aqueducts are alongside of each other, are they not?—For a part of the distance.

18,246. If anybody wanted to blow up the one they could blow up the other?—As far as blowing up is concerned, I do not know that the two would be very much better than the one. From a military point of view, I think it is a great source of weakness.

18,247. (*Chairman.*) Then you have already, I think, told us that another objection to the Welsh Scheme is the difficulty of connecting the supply mains from Elstree with the existing service reservoirs?—Yes.

18,248. And you think there is a further objection that the localities traversed might claim part of the Welsh supply?—That is so.

18,249. I think, now, it will be, perhaps, the clearest way to take your estimates of the cost of the Welsh Scheme. I think we have had one already, but, perhaps, in order to get your evidence complete, we had better take them in order. Have you prepared an estimate of the cost of the first instalment of the Welsh Scheme?—Yes.

(*Mr. Pember.*) Mr. Middleton's method, my Lord, of dealing with the Welsh Scheme is by considering what has happened in the Manchester, Liverpool, and Birmingham cases, and then, having cleared the way on the point of principle and presumption—of course, it is presumption, and presumption only—he goes to what he thinks the Yrfon will cost and what the others will cost.

18,250. (*Chairman.*) Perhaps I had better take that as well as I can to illustrate the mode in which you have calculated the cost of the Welsh Scheme. You have considered the cost of the Manchester supply from Thirlmere, the Liverpool supply from the Vyrnwy, and the Birmingham supply from the Elan Valley?—Yes.

18,251. The cost of the Thirlmere Scheme per million gallons of supply is how much?—88,000*l.*

18,252. And of the Vyrnwy?—97,500*l.*

18,253. And of the Elan Valley?—The estimated cost of the Elan Valley is 89,333*l.*, and the average of those three is 91,611*l.*

18,254. What are the lengths of the aqueducts of those several schemes?—Thirlmere is 96 miles long, the Vyrnwy is 67 miles, and the Elan Valley 80 miles, the average being 81 miles.

18,255. (*Mr. De Bock Porter.*) Does the large addition to the Vyrnwy price arise from the shorter distance traversed?—No, I think not; I think it is from the larger character of the works.

18,256. (*Mr. Pember.*) The bank at Thirlmere was a very slight affair?—It is a very small one.

18,257. The average of those three lengths is 81 miles, you say?—Yes.

18,258. I think, perhaps, to complete that we ought to have the quantities that those works are destined to supply?—The Thirlmere works are intended to deliver 50 million gallons per day when completed.

18,259. And the Vyrnwy?—40 million gallons per day.

18,260. And the Elan Valley?—75 million gallons per day.

18,261. (*Mr. De Bock Porter.*) The Elan Valley is very much cheaper than the others?—The Elan Valley is estimated to be very much cheaper than the Vyrnwy. It is not completed yet, and whether the eventual cost will be the same as the estimate I am not prepared to say.

18,262. (*Chairman.*) The result of these figures is that for an average of 81 miles of aqueduct you get an average cost of 91,611*l.* per million gallons supplied?—Yes, including, of course, the reservoirs.

18,263. The supply reservoirs, you mean?—Yes.

18,264. As I understand, you have adopted that as part of your estimate of the cost of the Welsh Scheme?—Yes.

18,265. Namely, that the head works, including dam, land, compensation, and 81 miles of conduit, will cost 91,611*l.* per million gallons of supply?—Yes.

18,266. Now, we know that the length of the aqueduct from Wales is 162 miles?—Yes.

18,267. Therefore, there remain 81 miles of aqueduct to deliver how much?—215 million gallons per day.

18,268. That is more than the first instalment of the Welsh Scheme?—No, that is the first instalment if the figures are taken out as they are put down in the Report.

18,269. You say so, and I must take it to be so. Upon what basis do you calculate the cost of that?—I worked out a section of an aqueduct of this description and found that it would cost 64,000*l.* per mile.

18,270. Therefore, for this surplus of length, this excess of length in the Welsh Scheme of 81 miles, you take a different principle of valuation, and you take it at so much per mile?—I do.

18,271. Have you allowed in that calculation of 64,000*l.* per mile for connexions between the different reservoirs?—The connexions with the service reservoirs, do you mean?

18,272. Yes?—No, I have not allowed for connexion with the service reservoirs.

18,273. (*Major-General Scott.*) For this expenditure of 64,000*l.* per mile for the continuation of the conduit you obtain a conduit which will carry 215 million gallons?—Yes, that is what I understood has always been proposed.

18,274. And the whole cost of that is attached to an instalment of 123½ million gallons?—That is so.

18,275. (*Chairman.*) I by no means pledge myself to the accuracy of my recollection, but I thought that although the aqueduct in the Welsh Scheme was to be constructed in the first instance capable of carrying the whole 215 million gallons a day, that the pipes for about one-half of the aqueduct were only to carry in the first instance 123½ million gallons per day?—That is so; that is perfectly true, but that is included in the variable sum which is worked out from the analogy from the other reservoirs, from the Vyrnwy, the Thirlmere, and the Elan Valley works.

18,276. (*Sir George Bruce.*) Do you mean that is included in the 91,000*l.*?—It is included in the 81 miles of pipes connected with the reservoirs.

18,277. (*Chairman.*) I daresay it may be so, but I do not quite see how; those three supplies from the Thirlmere, Vyrnwy, and Elan Valley were intended to supply very different quantities of water?—Yes.

18,278. You have taken an average of those as applicable to a system which is to convey a fourth and a totally different quantity of water?—A larger quantity of water.

18,279. How can that be a safe guide—I cannot quite see. How can the average of supplies that range from 40 millions to 75½ millions be a safe guide for

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Mr. R. E. Middleton. the cost of a supply that is to carry 123½ million gallons?—I think it is the best guide that we could have.

29 Nov. '98 18,280. (*Mr. Pember.*) The cost is per million gallons?—It is per million gallons of supply.

(*Chairman.*) Yes, that is true.

18,281. (*Mr. De Bock Porter.*) Would not the cost be relatively higher in the case of the smaller quantity to be conveyed?—I think that is not so. For instance, take the Vyrnwy, which is one of the highest in cost. The dam of that reservoir is 1,075 feet in length, I think—I am not quite certain about the height, but it is not more than 161 feet, and I have heard that it is 147—but take it at 161; the Yrffon dam as given is 4,750 feet in length and is 166 feet high. Therefore, it is more than four times the volume of the other dam; yet the supply to be given from the Yrffon is only three times the quantity, therefore, it compares unfavourably with the Vyrnwy. If you take it with the Thirlmere, it compares infinitely more unfavourably, because the length of the Thirlmere dam is only 880 feet and its height is only about 80 feet, and, therefore, it is something like a tenth of the volume in that case, whereas the delivery is only two-and-a-half times more.

18,282. (*Major-General Scott.*) When you talk of height, do you take it down to the bottom of the foundation?—This is taken in every case, not to the bottom of the foundation, I should imagine, but to the original rock.

18,283. (*Mr. De Bock Porter.*) An aqueduct to convey a smaller quantity of water would be relatively much higher than one to convey a large quantity, would it not?—To some extent, yes, but not as regards the pipes; the pipes would not vary very much.

18,284. But the easements, the acquisition of land, and all that sort of thing, would be just the same for a small quantity of water as for a large?—No, that would not be true.

18,285. It would not make a large difference?—It would not make a very large difference; but the easements in this case, of course, are contained for the most part in the 64,000*l.* per mile, a large proportion of them are. I may say, with regard to Staines, we have found distinctly that we had to pay simply in proportion to the area, that if it was a narrower strip we paid more in proportion, if it was a wider strip we paid less in proportion, the severance, of course, in each case being the same, and the damage to property being the same, whether the strip was wide or narrow.

18,286. (*Chairman.*) Then I think we may now conveniently take your estimates of the Welsh supply. What do you estimate the cost of bringing 123½ million gallons from Wales to London would be?—The capital cost is 20,839,243*l.*

(*Witness handed in Estimate 15 (a), (b), (c), and (d). See Appendix L, Estimate 15.*)

18,287. That total is got out in the way you have just explained?—Yes.

18,288. By taking 81 miles of pipe and conduit at the average cost of the other Welsh Schemes, if I may so call them—the other three systems you have mentioned—and for the remaining 81 miles, taking 64,000*l.* per mile?—Yes.

18,289. You estimate the service reservoirs at Elstree at 1,314,750*l.*?—Yes.

18,290. (*Mr. De Bock Porter.*) What is the size of that reservoir; have you got it in acreage?—I have taken this figure from Sir Alexander Binnie's figures. I believe it is intended to hold a little over 3,000 million gallons.

18,291. You have taken for the mains between Elstree and the service reservoirs of the companies no less than 3,000,000*l.*?—Yes.

18,292. Then you have charged an item for the cost of pumping machinery?—Yes.

18,293. I do not know whether that figure requires any justification?—I do not think so. I think it is an accurate figure.

18,294. (*Major-General Scott.*) You have gone into the question of the number of service reservoirs at present existing which would have to receive water by pumping, have you not?—Yes.

18,295. You have not given us any details yet as to that matter?—Yes, they are all contained in the table which I put in at Question 14,846,

18,296. It forms the basis of this particular item?—Yes, it does.

(*Chairman.*) Which item?

(*Major-General Scott.*) This pumping item.

18,297. (*Chairman.*) Pumping to supply?—Yes.

18,298. You say that table has been put in?—Yes.

18,299. You have added two items in this estimate that we are now upon for work in progress and for accumulated interest?—Yes.

18,300. What is the meaning of "work in progress"?—The construction of the next reservoir would have to be commenced before this one was exhausted, 10 years before this one was exhausted, and so much work would have been done to it.

18,301. Before which was exhausted?—Before the Yrffon reservoir, the first reservoir of the first instalment.

18,302. That then ought to form part of an estimate of a greater supply, not of the 123½ millions?—Except that these are made up to a particular time and, therefore, it is part of the charge up to the particular date when this reservoir would want to be supplemented, and when another reservoir would have to come into use in order to supply.

18,303. Surely that would appear when we come to consider your estimates for the larger supply, would it not?—Then, if you take the footnote, that will give it without that figure.

18,304. (*Major-General Scott.*) This estimate is connected with and framed to correspond with your large estimate of progressive expenditure?—That is so.

(*Mr. Pember.*) It is not only the expenditure on a certain scheme, but the expenditure during certain periods.

18,305. (*Major-General Scott.*) And in that estimate of progressive expenditure you have progressive amounts for interest?—Yes.

18,306. Perhaps we had better pass at once to your next estimate, 15 (b), which is the cost of bringing 135 million gallons from Wales to London?—Yes.

18,307. I do not know why you have fixed upon 135 million gallons, you have handed in estimates for the cost of 135 million gallons, 172 million gallons, and 215 million gallons; I do not quite know why those two intermediate stages have been taken?—Because they are each one reservoir. The Yrffon reservoir is first, then to that is added the Towy reservoir, to that, again, is supposed to be added the Ithon reservoir, and then the Upper Wye reservoir.

18,308. Do your estimates show that?—I think so. At the top of the second estimate you will see, for instance, "Yrffon and Towy reservoirs."

18,309. In your second estimate, I see, you bring out a total capital cost of 22,256,025*l.*?—Yes.

18,310. Surely this Towy reservoir, which is added in this estimate, is part if not the whole of the work in progress which you put at the foot of your former estimate?—A good deal of it is the work in progress then.

18,311. But there is not that difference in the totals, is there—there is a difference of nearly 2,000,000*l.* here?—Yes, the other one, the Ithon, would also be in progress as well. The Towy is a very small reservoir, but the Ithon would have to be in progress at the same time.

18,312. Do you mean the "work in progress" in the first estimate includes something more than the Towy?—Yes.

18,313. Here again, in your second estimate you have got the "work in progress"; is it added to the former millions, or is it part of them?—It is part of them. It is the same work in progress at this particular date.

18,314. Now, will you go to your estimate of the cost of bringing 172 million gallons from Wales which brings in the Yrffon, Towy, and Ithon reservoirs?—Yes.

18,315. Your total capital cost there is 27,730,747*l.*?—Yes.

18,316. Then your estimate for the cost of bringing 215 million gallons from Wales brings out a total capital cost of 32,729,515*l.*?—Yes.

18,317. (*Mr. De Bock Porter.*) Speaking broadly, in the three cases, from 123½ million gallons, to 172

million gallons inclusive, you practically double the cost of the undertaking by adding for works in progress and accumulated interest?—Yes, naturally. Of course, in the last estimate there will be no works in progress; the instalment is supposed to be completed then, and I have not gone beyond that.

18,318. But in each of the others you double the cost practically?—The accumulated interest amounts to 24,393,108*l.*, and the cost of the works is 32,729,515*l.*

18,319. That is in the last estimate, but I am speaking of the three others; in the first, you exactly double the 20,000*l.*?—Yes.

18,320. And in the next you more than double the 22,000*l.* which you arrive at there?—Yes, and in the third it is a little less.

18,321. In the third you nearly double it?—Yes.

(*Mr. Pember.*) The result being that the total amount under those two heads of "works in progress" and "accumulated interest," when you come to the grand total, represent 24 as against 23.

(*Chairman.*) That is for accumulated interest only.

(*Mr. Pember.*) Because that includes all the previous things?

(*Chairman.*) Yes.

(*Mr. Pope.*) The "work in progress" is dropped in the last estimate because the scheme is complete and there are no works in progress then; it is all done.

18,322. (*Mr. Pember.*) Let us be quite sure we are right. (*To the witness.*) That figure of 24,393,108*l.* does include the previous figures both for accumulated interest and for works?—Certainly.

(*Chairman.*) No, not "and for works."

(*Witness.*) Certainly, my Lord, any of these works that have gone before—all the works. Everything that has been done up to this date.

18,323. (*Chairman.*) But works in progress in the previous estimates are not included in the final item for interest?—No, but the interest on them is.

(*Mr. Pope.*) They are absorbed in the estimate of the works, of course.

18,324. Yes, they are absorbed in the estimate of the works, of course.

18,324. (*Chairman.*) Yes, they are absorbed in the estimate of works, but the accumulated interest item is quite distinct. (*To the witness.*) The item of accumulated interest in the last estimate includes the items of accumulated interest in the previous estimates?—Certainly.

18,325. But the cost of works in progress in the last estimate is wiped out and goes into the total cost of works?—Yes.

(*Sir George Bruce.*) The cost of works in progress is included in what we have down here, 32,729,515*l.* as the total capital cost.

(*Mr. Pember.*) Yes, that is it.

(*Chairman.*) I do not propose to discuss these estimates in detail with you.

18,326. (*Major-General Scott.*) Have we had from you a distinct statement of the items which are included in this cost?—I do not think you have.

18,327. (*Mr. Pember.*) Have you not got an estimate giving those items?—Yes, I have an estimate, which I will now hand in; I think that will give you all the items.

(*The witness handed in Estimate 16. See Appendix L, Estimate 16.*)

18,328. (*Chairman.*) This table is to my mind unintelligible; what is it?—It is merely putting down in a tabulated form the estimates 15 (a), (b), (c), and (d), which we have just been going through. It shows how they are made up and how the interest is accumulated.

18,329. You say that explains and justifies the estimates you have just laid before us?—Yes.

18,330. (*Major-General Scott.*) I do not see that this table gives us information as to the items included?—I think it does; if you look at the head of each column, I think you will see that every item is mentioned at the head.

18,331. (*Sir George Bruce.*) It does not show at all whether you have charged for land or what you have charged for land?—The land is included.

18,332. Where does it say so?—It does not say so, but as I have taken that by analogy with the other works at the Vyrnwy, at the Elan Valley, and at Thirlmere, where land was included, of course—the land is included in this case.

18,333. (*Mr. De Bock Porter.*) It is wholly based on the experience of those three cases?—Yes, as far as the first item is concerned.

18,334. (*Major-General Scott.*) Of course, we can make no proper comparison between the estimates put forward on the one hand by the County Council and on the other by yourself with regard to these works unless we know exactly or can ascertain exactly what items in either case are included, it would vitiate all comparison unless you start from an agreement, as it were, that the same items or that all the items shall be included in both estimates?—All the items which are not specially cut out in the body of my statement, that is to say, filtration, for instance, are all included, land, Parliamentary expenses, the reservoirs, dams, compensation works, the aqueducts, and the easements for the aqueducts, the connexions between the service reservoir at Elstree, but not filter beds, the connexion between Elstree and the service reservoirs of the companies—these are all included; but there is nothing included for distributing mains from the service reservoirs of the companies in either estimate—either for the Thames or for the Welsh Scheme.

18,335. (*Chairman.*) Now, have you got any tables including the expense of providing a filtering area at Elstree?—Yes, but they were prepared on the understanding that they were to introduce the whole of the supply of 121 million gallons at once.

18,336. 121 millions?—123½ millions.

18,337. Do use the right figures?—123½ then, and by that means the saving of the pumping of 123½ million gallons was made. I think, considering that Sir Alexander Binnie said the other day that it was not his intention to introduce the whole of the instalment at once, those tables need not be put in.

18,338-9. As I understand, the difference between them and what you have just put in is that a filtering area was provided?—It is not only that, it is also the introduction of the whole of the supply at once, by which a large amount of pumping would be suspended.

18,340. Then they need not be put in?—I think they are unnecessary now. There is another estimate I should like to put in though.

18,341. What table is that?—It is an estimate comparing the cost of the Thames supply with the Welsh supply.

18,342. (*Mr. Pember.*) The other ones are not put in, not as being incorrect, but as needless?—As needless under the conditions stated by Sir Alexander Binnie.

18,343. (*Chairman.*) Is this the best place to take this estimate?—Yes, it should come in now.

(*The Witness handed in Estimate 18. See Appendix L, Estimate 18.*)

18,344. What is this estimate intended to show?—It is an estimate comparing Estimates 14 and 16, which were put in at Questions 17,790 and 18,327.

(*Mr. H. L. Cripps.*) I do not know whether I might ask if we might be supplied with a copy of those estimates which have not been put in, because, although they are irrelevant, probably, for the present purposes, they would help us materially to see how these somewhat amazing total calculations are arrived at, which just at present we are a little in the dark about. If Mr. Middleton would give us the estimates to look at, I think it would help us.

(*Mr. Pember.*) I do not know that there is any harm in it.

(*Mr. H. L. Cripps.*) They will not appear on the notes, but they are evidently part of the material out of which these calculations are developed.

(*Mr. Pember.*) You might just as well have his rough notes, though.

(*Chairman.*) They are no part of the material upon which any figure in evidence is based.

(*Mr. H. L. Cripps.*) Very well, my Lord, if they have no bearing on the matter, then I cannot ask for them.

(*Mr. Pope.*) That is the reason they are not put in, because they have no bearing upon the matter now,

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Mr. R. E. Middleton. after what we heard from Sir Alexander Binnie the other day.

29 Nov. '98 (*Mr. H. L. Cripps.*) I should be glad if he would supply us with a copy of them; but if you object, of course, we must do without them.

(*Mr. Pope.*) I do not mind; you can look at my brief, as far as I am concerned.

18,345. (*Chairman.*) I do not think they are very fruitful. (*To the witness.*) What is this Estimate 18 you have just handed in?—It is a comparison between the cost of the Thames supply and the Welsh supply, based on Estimates 14 and 16, handed in at Question 17,790 and Question 18,327.

(*Chairman.*) My mind is not capable of grasping it, so I really can ask you nothing about it.

18,346. (*Mr. De Bock Porter.*) Stated roughly, you make the capital cost of the works to supply 123½ million gallons five times greater by the Welsh Scheme than by the Staines Scheme?—That is so.

18,347. (*Sir George Bruce.*) Upon this estimate you have just handed in you have the total capital cost, accumulated interest, and so on, of the Welsh Scheme, amounting, according to your calculations, to 41,958,671l. ?—Yes.

(*Mr. Pember.*) That is for 123½ million gallons, as you will see at the top.

18,348. (*Sir George Bruce.*) Take the end one for 1948, which is 57,148,927l.; what quantity of water is that supposed to supply to London from Wales?—215 million gallons.

(*Mr. Pember.*) There is a head note to that effect, you will see, Sir George.

18,349. (*Sir George Bruce.*) Is that all that is proposed to be got from Wales?—There is a second instalment afterwards of 200 million gallons, or 182 million gallons besides, I believe.

18,350. You have not gone into the cost of that?—I have not gone into it beyond the 215 millions. I have taken it up to that point and no further; it would have meant carrying it on to nearly the end of the century.

18,351. (*Mr. Pember.*) That makes a supply of 400 million gallons altogether, including the Thames 185 and this 215?—Yes.

18,352. And it brings the Thames Scheme up to the same point as the Welsh one?—Yes.

(*Mr. Pember.*) In regard to what fell from one honourable Member of the Commission, my Lord, it does not make the Welsh Scheme five times the cost of the other.

(*Chairman.*) Not for that quantity of 215 million gallons, but it does for the first.

(*Mr. De Bock Porter.*) For the capital cost of works it does.

(*Mr. Pember.*) It begins at five times and works downwards.

(*Chairman.*) It is more than five times the cost for the first 123½ million gallons?

(*Mr. Pember.*) Yes, my Lord, and then it works downwards.

18,353. (*Sir George Bruce.*) What quantity of water would be supposed to be coming into London when that 215 millions was coming in in 1948?—400 millions of the Thames supply, and the Lea and wells supply, which you may take at about 120 million.

18,354. (*Chairman.*) You are not answering Sir George Bruce's question; he was asking you what was the quantity of water supposed to be coming into London at the time of that last column in your table—it would be 215 million gallons from Wales, and 185½ million gallons from the the Thames and the Lea, would it not?—No, not from the Lea.

18,355. From the Thames?—From the Thames, and then there is the Lea to add.

18,356. (*Mr. De Bock Porter.*) And the supply from wells?—Yes, the Lea, the wells, and the Kent Company.

18,357. (*Chairman.*) It is the present London supply plus 215 millions?—It is the present authorised supply—not the present supply, but the present authorised supply.

18,358. (*Sir George Bruce.*) The authorised supply of 185½ millions?—Yes, plus the Lea and the wells.

18,359. (*Major-General Scott.*) There are 52½ millions from the Lea, 40 millions from the wells in the Lea Valley, and 27½ millions from Kent?—That is so, and two millions from the Streatham Well, I suppose.

18,360. (*Mr. Pember.*) I think there ought to be no confusion in the figures. The figures 18,000,000l. and 57,000,000l., of course, do not compare the whole of the London supply, including Wales and the Thames and the Lea, and all these things; it only compares what you will get from the Thames at that time with what you will get from the Thames and Wales taken together. (*To the Witness.*) That is so, is it not?—That is so.

18,361. (*Sir George Bruce.*) It is rather the price at which you would get 215 million gallons from Wales as compared with what you would get 215 million gallons out of the Thames for?—That is so.

18,362. (*Chairman.*) Yes, that is it exactly. If you want to add 215 million gallons to your present authorised supply, you may get it in two ways, according to the evidence—one from the Thames at a cost of 18 million pounds odd, the other from Wales at a cost of 57 millions odd?—Yes.

(*Mr. Pember.*) That is what I meant.

18,363. (*Mr. Mellor.*) Do you provide for the same filtration for the Welsh water as you do for the Thames water?—I think so. The price put down, I think, by Sir Alexander Binnie for the filtration was just the same—10,000l. per million gallons.

18,364. Do you think the water would require the same amount of filtration if it came from Wales?—I am taking his word for it.

18,365. I am not asking you for his opinion. I am asking you for your opinion if you will be kind enough to give it to me?—I think it would.

18,366. You think it would?—I do not say it is necessary to have the filtration for the Welsh water as good as for the Thames. I am only saying that I have taken it on the same basis.

18,367. (*Chairman.*) Now you throw me again on to an ocean of doubt. I thought you said you would not put in the estimates in which you had calculated anything for the filters?—The filters have to be constructed, and they should be calculated for that reason, and we have to put one against the other.

18,368. You have nothing for filtration in the estimates you have put in?—No, but they have to be constructed, and they have to be constructed for both schemes, whichever one is adopted.

(*Mr. Pember.*) Therefore, if filtration costs rather more in the Thames, you will have to add rather more for the filtration in the Thames than for Wales.

(*Mr. Pope.*) As I understand, filtration is a common sum in each, and, therefore, you have to add it.

18,369. (*Chairman.*) Have you left out the item for filtration in the Thames?—Entirely.

18,370. (*Mr. Mellor.*) With regard to the filtration, why is it that the water coming from Wales requires so much filtration?—A good deal of it will contain a large proportion of peat, and peat requires more filtration than anything else.

18,371. Will it carry that peat all the way from Wales?—If it is carried in a closed conduit underground, it will. It requires to be exposed to light for a considerable time to bleach it.

18,372. I understood you to say yesterday that when the Thames was in a flooded condition the pollution was greater?—So I believe it to be, and in fact all the statistics prove it to be so.

18,373. There are two sources of pollution in the Thames, are there not—the one what you might call a sewage pollution?—Yes.

18,374. And the other the agricultural pollution?—Yes.

18,375. Which is the worst when the water is in flood?—As far as I know, the sewage pollution is the worst.

18,376. The sewage pollution?—Yes; that is the animal pollution which is partially from manure and partially from cities.

18,377. In your opinion is not that which washes off the surface of the soil agricultural pollution?—Undoubtedly some of it will be.

18,378. (*Mr. De Bock Porter.*) That is because the overflow from the sewage works frequently finds its way into the river at a time of flood?—It has a tendency, of course, to be less thoroughly filtered in times of flood—less thoroughly cleansed in times of flood than at other times.

18,379. (*Mr. Mellor.*) I suppose you can do something to stop the pollution from sewers?—Yes, the Thames Conservancy can.

18,380. I mean the Thames Conservancy can, but with regard to the agricultural pollution it would be more difficult?—It would be certainly much more difficult.

18,381. Because that comes off the surface of the land?—Yes.

18,382. What is the condition of the Lea with regard to pollution?—The Lea water, I think, is quite as good as the Thames water—a little better if anything.

18,383. A little better?—Yes, if anything.

18,384. Is the Lea at all affected by sewage?—Yes, the town of Hertford drains into the Lea.

(*Mr. Pember.*) After very careful treatment, mind.

18,385. (*Mr. Mellor.*) Is there any body of conservators to look after the Lea?—There is a body of conservators.

18,386. Having the same duties with regard to the Lea that the Conservators of the Thames have with regard to that river?—Yes, but not with quite the same powers.

18,387. Would you say with regard to the Lea pollution that that is to be divided into two influences, viz., the sewage pollution and agricultural pollution?—Yes, just in exactly the same way.

18,388. Now, with regard to the water that is taken from wells, do you find any pollution in water from wells?—Do you mean deep wells like the New River wells?

18,389. Yes?—Barely any—a bare trace.

18,390. Then water taken from wells, as a rule, does not require any filtration; that is what you mean?—I am afraid I can scarcely agree with that. I do not think it is safe to take water from wells without filtration.

18,391. Not from deep wells?—I think it ought all to be filtered, in my opinion. We have known cases of deep wells being polluted, and under the circumstances the pollution of a deep well is more dangerous than the pollution of a stream, because there is no second line of protection.

18,392. (*Chairman.*) Because there is not what?—No second line of protection. There is no filtration to take away the pollution.

18,393. All water in wells, however deep, must come from the surface originally, I suppose?—The pollution does not arise in that way; it must be specific pollution, or almost invariably is so.

18,394. What do you mean by specific pollution?—It must be one actually falling into the well or coming into it from somewhere quite close by; it may be a drain which has broken into the well.

18,395. Surely, if rain water falls upon agricultural land charged with all kinds of foul matter, does it not gather pollution before it sinks into the chalk?—It may gather pollution before it sinks down, but it will all be taken out again before it has gone more than a foot or two under the surface.

18,396. (*Mr. Mellor.*) In point of fact, is all the Kent water filtered?—No, it is not.

18,397. (*Mr. De Bock Porter.*) The Thirlmere water is not filtered, is it?—It is not filtered.

18,398. (*Major-General Scott.*) Do you contend that all the water in Kent taken from the chalk wells ought to be filtered?—I think it would be safer, myself.

18,399. But a well in a fairly isolated position—a deep well in the chalk with iron cylinders down the well for a considerable depth—would hardly receive pollution, would it?—I was thinking rather of the case of the Caterham well, in which there was a man who was employed who got typhoid fever. His stools were poured into a bucket, and the bucket was upset into the well, and a large amount of typhoid fever was propagated in the district.

18,400. But it ceased after a certain amount had been pumped out, did it not?—Yes, it did.

18,401. It did not affect the well permanently?—No, certainly not. I do not think there is any fear of a permanent damage.

(*Chairman.*) Do you mean that filtration is only necessary to provide against men tumbling down a well with typhoid fever upon them?

18,402. (*Sir George Bruce.*) It is the fact, is it not, that the reports of the chemical examiners from month to month of the Thames and the Lea are always more favourable for the Lea water than for the Thames?—Yes, that is so.

18,403. (*Chairman.*) I want to conclude your estimates if I can; what is your next estimate of importance?—I have an estimate which is comparative with the estimate I handed in at Question 18,327, taking the figures almost exactly as they have been put forward by Sir Alexander Binnie.

18,404. Will you hand that in then?—Yes.

(*The witness handed in Estimate 17. See Appendix L., Estimate 17.*)

18,405. (*Sir George Bruce.*) In Estimate 1, which you put in at Question 17,465, you give us your estimate of the cost of supplying 185½ million gallons under the conditions of 1893, which you put down as 2,148,168*l.*?—The cost of that is 1,311,900*l.*

18,406. In that case you capitalise the yearly cost of pumping at 30 years' purchase?—Yes.

18,407. And the total comes to 2,148,168*l.*?—That is so.

18,408. Does that compare with Sir Alexander Binnie's estimate of 4,705,185*l.*?—Yes.

18,409. That is to say, he has estimated it at rather more than double what you have estimated it at in your own way?—Yes, that is so.

18,410. Is your estimate of that work based upon the prices of the work you are doing just now at Staines?—Yes.

18,411. (*Mr. De Bock Porter.*) The 300*l.* per million gallons which you have put in your estimate covers all the expenses of land and reservoirs, does it?—Land and everything.

18,412. (*Sir George Bruce.*) Sir Alexander Binnie estimates that at 380*l.* per million gallons?—Yes.

18,413. Then his cost of pumping is greatly in excess of yours, I see?—Yes, it is.

18,414. He has 79,170*l.* for it, and you have 26,586*l.*, but I see he takes a different price; how do you arrive at your sum of 7*s.* 6*d.* per million gallons?—The ordinary price for pumping, is 5*s.*, but owing to the fact that these engines will have to stand for considerable periods, and the men will have to be paid their wages, though the engines are standing, I thought it desirable to add on 50 per cent. to the price.

18,415. Sir Alexander Binnie assumes that you will pump into reservoirs 10,566 million gallons, and you have it only 4,431 million gallons. Upon what have you based your estimate?—On the several years of comparison, the 16 years' of comparison, of which we have the data, which are to be found in Table 7, which I handed in at Question 17,622, Sir Alexander Binnie has taken the very worst year, and supposed that we should pump the same quantity during every year as would have to be pumped in the worst year; that is the reason for the difference.

18,416. Of course, the size of your reservoir would have to be based upon the worst year?—That would have to be based upon the worst year, but not the quantity of pumping.

18,417. Sir Alexander Binnie assumes that you will require 8,000 millions of storage capacity for this amount of 185 millions, and you assume 5,239?—Yes.

18,418. Do you know how that difference arises?—The difference clearly arises by Sir Alexander Binnie saying that we want 2,000 million gallons for cleansing purposes, and he takes a much larger amount for bottom water and evaporation than I do.

18,419. (*Chairman.*) I wish you would now put in the remainder of your estimates?—Yes, they are comparative estimates. I think they will be useful, but I do not say they are necessary.

(*Witness handed in Estimates 19, 20, 21, 22, 23, and 24. See Appendix L.*)

18,420. (*Sir George Bruce.*) Do you consider it would be necessary to take as the basis of your calculations what you are to supply in such a year as 1893?—I think

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Mr. R. E. Middleton. it must be taken into consideration; whether it is to be taken into consideration with the same limit at Teddington is quite another thing.

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18,421. You would base it independently of Teddington, would you?—You must use it as a matter of calculation, undoubtedly.

18,422. Now will you turn to your Estimate 9, handed in at Question 17,606, which is to supply 300 million gallons a day, and which comes to 8,410,264*l.*?—Yes.

18,423. Is that including the capitalising at 30 years of the annual cost of pumping?—No; there is no capitalisation of pumping in that estimate.

(*Mr. Pember.*) He takes the actual cost.

(*Witness.*) The actual cost for 35 years.

(*Mr. Pember.*) From nil to 170 million gallons per day.

18,424. (*Sir George Bruce.*) The actual cost for 35 years would come to more, would it not?—No, because, of course, it is an increasing item, and if you capitalise it to the last you will be capitalising for 33½ years, or whatever the term was beyond the last date when the works of supply were taken to.

18,425. I understood you in this case just took the total cost during the whole 35 years?—That is so.

18,426. Then, according to the corresponding estimate, in which you deal with Sir Alexander Binnie's figures, he makes the cost of your works under the conditions of 1898 come to 15,589,990*l.*?—Yes.

18,427. But Sir Alexander Binnie has not put any estimates before us upon the basis of 1898, has he?—No.

18,428. Then you have worked out this upon the figures of his previous estimates, based upon 1893?—Yes.

18,429. And accommodated them to the conditions of 1898?—No, I have not altered them; I have not altered Sir Alexander Binnie's estimates at all.

18,430. The total storage reservoir to be provided you have got down here as, according to Sir Alexander Binnie, 28,000 millions?—Yes.

18,431. Is that the quantity which he put down in regard to the year 1893?—That is so.

18,432. Then it does not compare—this estimate of Sir Alexander Binnie's would be larger, because you would have to alter that figure?—Certainly, if you introduced 1898 you would have to alter that figure.

18,433. (*Chairman.*) Then that Estimate 9 is misleading?—Not in comparison with my Estimate 9; it is only so if you compare my figures in Estimate 10 with those of Sir Alexander Binnie in Estimate 9.

18,434. (*Sir George Bruce.*) But it would be misleading with regard to the other Estimate 9, surely?—No, because my Estimate 9 is based on 1893.

(*Mr. Pember.*) Estimate 10 is based on 1898.

18,435. (*Sir George Bruce.*) For the Thames supply based on 1898 you make the total cost of reservoirs come to 10,399,441*l.*?—Yes, that is, including capitalised pumping.

18,436. Why do you capitalise in that case?—I introduced the capitalisation of pumping so that it might be known what the sum would come to, though I believe the non-capitalisation of pumping is a more fair way of treating it.

18,437. Have you first of all treated the whole expense of pumping during the 35 years?—Yes.

18,438. As being 2,173,794*l.*?—Yes, that is so.

18,439. And then you have capitalised it besides?—I have capitalised it and discounted it to the present date.

18,440. You will have taken into consideration that you had already provided for 2,173,794*l.* when you capitalised it—I see you must have done so, because you simply add a sum of 1,155,000*l.*?—No, the 1,155,000*l.* is for mains; it is a capital charge.

(*Mr. Pember.*) He puts it that the pumping charges are to be capitalised at 3 per cent., and reduced to present value.

18,441. (*Sir George Bruce.*) Then you add for that 2,908,671*l.*?—No, I substitute the 2,908,671*l.*

18,442. And then that compares with Sir Alexander Binnie's estimate of 15,589,990*l.* shown in your Esti-

mate 9?—Which does not include the item for mains, which would have to be added.

18,443. (*Chairman.*) And is not based on the conditions of 1898, but on the conditions of 1893?—That is so.

18,444. (*Sir George Bruce.*) In reference to the diagram which you put in at Question 18,202 to explain your Table 3, can you tell us how many more of these reservoirs which you told us contain 3,600 million gallons will be required under the conditions of 1898 than under the conditions of 1893?—Two; and I propose to ask to be allowed to put in now a diagram based on the figures which are contained in Table 4, which I handed in at Question 17,774, in which the deficiencies are calculated on the year 1898.

(*The Witness handed in Diagram C. See "Maps, Plans and Diagrams."*)

18,445. How much water is that, supposing you get it from the Thames?—400 million gallons altogether.

18,446. You are going up to the 400 million gallons?—Yes.

18,447. That is beyond what the Balfour Commission does?—Yes. Both diagrams go up to 400 million gallons.

18,448. Two reservoirs more would bring it up to that?—Yes, they would.

(*Mr. Pember.*) The 215 million gallons which we talked of carries you up to the 400 million gallons, with the 185½ million gallons authorised.

18,449. (*Sir George Bruce.*) I thought that 215 would include the 185½, does it not?—No, it is in excess of the 185½.

(*Mr. Pember.*) It compares with the 215 of the Welsh Scheme, and the two both come on top of the 185.

18,450. (*Chairman.*) I suppose the result of all these estimates is that, in your view at least, the carrying out of the Welsh Scheme would mean a financial deficit?—That is my view, certainly.

18,451. Can you say for how long?—On the estimate that I have given, at any rate, up to the end of the time stated there, that is, up to the year 1948.

18,452. I suppose you cannot state what the amount of the deficit will be?—No, I could not tell you that.

18,453. That deficit must be got either from the consumer or from the ratepayer?—Yes.

18,454. But if the whole matter is in the hand of the London County Council, and they supply the outside counties in bulk, I suppose it is fair to assume that they would have to bear some portion of that expense?—Undoubtedly, I should think so.

18,455. And the London consumer himself, in your view, would also have to pay more?—He would have to pay more.

18,456. Or be aided by the ratepayer?—Yes.

18,457. In the event of the system of purchase by the London County Council and supply in bulk to the outside authorities being adopted, I think we have had no intimation of how extra mains, extra service pipes, and other extra works of distribution were to be met?—No, we have not.

18,458. Of course, if the counties took a supply in bulk, and took charge of their own distribution, they would have to meet that expense?—I should think not, primarily. The extension of the mains would fall upon them, but the connexion of the mains, so as to form a proper system, would fall, I should think, upon the supplier.

18,459. Upon what?—Upon the supplying authority; for instance, if they had to connect up the several mains together, so as to get them to one centre for the purposes of measurement, I should think that that cost would fall upon the supplying authority—upon the London County Council in that case.

(*Mr. Freeman.*) Of course, my Lord, in our scheme the suggestion was that we took over the rights of the companies; therefore, we should have to extend until any local authority bought these pipes. When the local authority bought, it would then be in the position of having to extend itself in exactly the same way.

(*Chairman.*) So I should have thought.

(*Mr. Freeman.*) But, until it did so, we should be held responsible as the companies are now.

(*Chairman.*) Yes.

(*Mr. Pember.*) And, of course, the County Council, or whoever the people might be, would always have to bring the water up to their doors?

(*Mr. Freeman.*) Clearly.

(*Chairman.*) That is the system of things remaining as they are, excepting that all the companies are in one hand, the County Council, or somebody else, whoever it may be; then that authority, whatever it may be, would have to bear the whole additional expense of distributing the extra quantity.

(*Witness.*) Yes.

18,460. (*Chairman.*) On the other hand, if the system adopted is supply in bulk by the purchasing authority to the several metropolitan counties, I should have thought the extension of the distribution system would fall upon those counties that choose to distribute themselves?—The extension certainly, I think, but not the alteration of the connexion.

18,461. Not the alteration of the connexion to enable the supply to be given to them?—That is so.

(*Mr. Pember.*) That is what I meant by bringing it to their doors.

(*Mr. Pope.*) To their boundaries would be a better expression than to their doors. Their doors might be taken to mean the individual consumer.

18,462. (*Chairman.*) Have you any opinion to offer us—I do not know that it is quite within your province—about the claim that the different counties have made before us to the supplies of water which exist in their own districts?—It seems to me to be unjustifiable in every way; I cannot see how any county can claim its supply, it is merely a passing quantity of water which passes through the county and which does not belong to them.

18,463. For instance, the water in the Kent chalk does not primarily belong to the county of Kent?—Primarily not, it is exactly in the same position as a river—it is passing through to the Thames and thence to the sea. If they can intercept it on the way, I presume they have a right to intercept it, and so I presume anybody else would have a right of interception.

18,464. You see what is done at present is to go into Kent, intercept water in Kent, and then take that away from Kent and give it to somebody else?—Except in this year, it has never been done before.

18,465. I beg your pardon, water is taken from Kent and largely supplied to portions of the Kent Company's district which are within the county of London?—I was treating that part of the county of London as part of the county of Kent.

18,466. That is what the counties have protested against; they say, water which is under our feet and in our district primarily should belong to us and should not be taken away for the wants of London?—Yes, that is so.

18,467. Therefore, if any new source of supply is wanted for London, they say, we have got plenty for our own use and let London bear the cost of that?—Yes. I think to some extent that is a reasonable statement, but I do not think I am prepared to support it all the way through. I think that it may be carried too far, like other things.

18,468. Very well, in fact, you hedge. I think I have elicited all you have to say in respect of physical severance between works of supply between the different counties?—Yes, I think so, I might say that London has exactly the same right, I should think, to go into the Kent that it has to go into Wales—neither more nor less; they are on the same basis.

18,469. That is, Parliament may give it the right?—Just so, and they might also give it the right to go into Kent.

18,470. The argument of the counties to us was that Parliament ought not to give that right, that it is unfair to the inhabitants of a county which has got plenty of water under its feet not to let them have the benefit of that water, and to oblige them to pay part of this 52 millions in fetching water from Wales?—I presume the Welsh people would say to some extent the same thing.

(*Chairman.*) We will hear the Welsh people when they come.

(*Mr. Pember.*) They did in the Birmingham case.

(*Mr. Pope.*) Mr. Vivian attended for Glamorganshire, and protested that Birmingham ought not to take the water away from Glamorganshire.

(*Chairman.*) I see there are some symptoms of a revolt in Wales against this scheme.

(*Witness.*) I saw some remarks in the paper this morning which bear that complexion.

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18,471. (*Chairman.*) I think you confined your observations upon the difficulties of severance to the county of Surrey and the county of Middlesex?—Yes.

18,472. Are there special difficulties connected with the county of Hertford as well in a severance of its sources of supply from the other sources of supply for London?—I should say, certainly, that the whole of the sources of supply are in the county of Hertford, and the delivery is largely in the county of London, and that to cut off the supplies would be to hand over a large quantity of water to the county of Hertford, which they could not use, and to deprive London of it, and it could not be supplied from London, but from Hertford.

18,473. I do not think anybody has suggested that, except, perhaps, some enthusiasts. There are at present certain rights of taking water from Hertfordshire for the use of London?—Yes.

18,474. It is not proposed to sacrifice those; what is proposed is, that if Hertfordshire chooses, some portion of those rights, as much as Hertfordshire wants, shall be handed over to it, keeping for London all it has now got of Hertfordshire water?—It would be impossible to give any opinion upon that without knowing exactly what Hertfordshire wanted, because it might be easily managed, or it might be very difficult.

18,475. Hertfordshire wants its present supplies plus a margin for future increase—a margin of, say, 20 per cent.?—There is no difficulty in their getting that at present—not the slightest.

18,476. Would there be any difficulty in severing the undertaking of the New River Company so as to give that, and that only, to Hertfordshire, keeping the rest for London?—It would be, I think, quite preposterous to give such an enormous supply to Hertfordshire, which does not in the least want it.

18,477. Its present supply, plus 20 per cent., for increase of population?—I thought you said the whole of the New River supply.

18,478. No, I am sure I expressed myself clearly. That is the suggestion, that there might be a severance between Hertfordshire and the purchaser of the New River Company's undertaking, or of two undertakings, whereby Hertfordshire should get a portion of the present means of supply as well as of the means of distribution, its proportion of the means of supply being measured by what it gets now, plus a margin of, say, 20 per cent. for the future increase?—It seems to me that it would be very useless to Hertfordshire.

18,479. I did not ask you that?—But, at the same time, there would be no particular difficulty in doing it.

18,480. How would you do it? How would you sever the New River Company's undertaking so as to give Hertfordshire its proportion?—There is, I think, a very small part of Hertfordshire supplied by the New River, but what that part is I am afraid I do not know.

18,481. You do not know?—No, I do not know, and I cannot give it.

18,482. (*Mr. Lewis.*) Suppose you look at it in this way—making Hertfordshire the water authority, and requiring the county to supply London with the quantity which London gets at the present time from the county, would that work—putting the obligation upon the county to continue to supply the county of London with the quantity of water which it now derives from the county?—I think it would produce endless friction. I should think there would be always difficulties in the way.

18,483. But, still, it would be a supply in bulk?—Of course.

18,484. But putting the obligation upon the county to supply?—Yes; I should say it would lead to endless difficulties.

18,485. (*Chairman.*) To do that you would have to hand over the whole of the New River system to Hertfordshire?—That is so.

(*Mr. Pope.*) And leave any residue in the county of Hertford in the jurisdiction of the county of Hertford, that is to say, to take the whole water production of

Mr. R. E. Middleton. Hertfordshire and give to London what it gets now out of that whole.

29 Nov. '98 (*Mr. Pember.*) And that would limit the future supply of London from that particular source to what it is at the present time.

(*Mr. Pope.*) Of course.

(*Chairman.*) Certainly; that would mean Hertfordshire incurring, to start with, the expense of buying up the New River Company.

(*Witness.*) Yes.

18,486. And leaving them to recoup themselves by what they might get from the supply in bulk to London of what they give London at present?—Yes.

(*Mr. Pember.*) And no machinery could force Hertfordshire in future to utilise the vast store of water under it for the general good of the people.

(*Chairman.*) Certainly not, on the principle of the severance of counties, each county looks out for itself.

(*Witness.*) And the county that has got nothing must do without it.

(*Mr. Pember.*) According to that, Wales is entitled to all its water.

(*Chairman.*) Yes, as far as its wants extend, but the Welsh sheep are the only inhabitants, apparently, of this watershed.

18,487. (*Major-General Scott.*) Would Hertfordshire find any difficulty in raising the money on the security of the New River Company's undertaking?—I think not; they would practically, under the circumstances, have no security.

18,488. Not if they were going to buy the New River?—They are only going to supply in bulk.

18,489. (*Chairman.*) They must buy the New River undertaking to do that?—With all its rights and privileges?

18,490. Yes?—Then they are supplying in London?

(*Chairman.*) No, they lose the benefit of the rises of valuation in London and of additional buildings in London; they only supply in bulk at a fixed price per million gallons to London at some points of communication to be arranged.

(*Mr. Pember.*) And they get the privilege of being allowed to leave all the enormous water resources underneath their ground unutilised for anybody.

(*Chairman.*) For the present.

(*Lord Robert Cecil.*) I should like to have the opportunity of cross-examining Mr. Pember.

(*Mr. Pember.*) Certainly.

(*Chairman.*) We only want to look at these schemes of severance in every aspect, if possible.

(*Witness.*) Surely, if they became purchasers of the New River, they would purchase all its rights, and they would purchase the right of supply in London, and they might say afterwards: "We will not give the water in bulk, we will supply in London."

18,491. No, they could only purchase the New River undertaking subject to the right of the county of London to be supplied in bulk and to distribute that supply itself. London is willing to concede that to Hertfordshire; if you turn the table round the other way, Hertfordshire must concede that to London?—Just so.

18,492. Therefore, if it could get the rights of supply in London, it would only get the right to sell London as much as London gets now, but in bulk at a price to be fixed, and I assume fairly fixed; therefore it would cut off all the prospective income that the London supply of the New River would hold out if things remain as they are.

18,493. (*Sir George Bruce.*) How do you think the New River Company would fare in a bargain of that kind, if instead of selling at the value of their present opportunities and privileges, they had to sell simply in bulk at a certain fixed price; do you think the New River shares would stand at anything like what they are now?—I do not think so, not if they had to do it now.

18,494. (*Chairman.*) But that lies in the scheme we are discussing to fall upon Hertfordshire. Hertfordshire would buy the New River Company as it is, with all its rights and privileges; they would find themselves cut off from the whole of the London supply of the New

River Company, at least, from the prospective advantages, the prospective profits of the London supply, and reduced to sell that supply in bulk to the London County Council?—I think Hertfordshire would not be satisfied.

18,495. It would not be a good bargain for Hertfordshire?—No, not at all.

18,496. Except that the amount is so much smaller, the same would hold if the converse system were adopted, namely, if London buys the New River undertaking with all its present rights, and then is reduced so far as the Hertfordshire part of the supply is concerned to simply getting the price in bulk of the quantity now supplied?—It entirely depends upon what that price in bulk is, as the supplying authority—that is, the authority which has to bear the brunt of the cost—would expect to get something more than the ordinary selling price—a profit, in fact, on their selling price.

18,497. Yes, but you could not propose that the price in bulk would be so fixed as to cover all prospective increases of income?—No, but it would cover some.

18,498. Therefore, whatever prospective increase of income it did not cover would be a loss in the purchase?—Yes, under that system.

18,499. (*Sir George Bruce.*) But the proportion to be sold in bulk to Hertfordshire would be very small compared with the converse, if they sold to London?—That would be so, very small indeed.

18,500-2. (*Chairman.*) The supply in Hertfordshire seems to be so insignificant. (*To the Witness.*) I think now, that is all. If you have any further suggestions to make, please make them. I think you have already stated all you have to say, have you not, about the distribution and the Welsh water when this water comes from Wales. If it ever does, it will have to be divided up between the several companies, I suppose?—Yes.

18,503. What would be the right way to divide it up?—I think that is a matter to be determined at the time, but it has to be split up and delivered direct into the service reservoirs of the companies and not into their mains.

18,504. That, I suppose, implies merely, more or less expense?—Certainly.

18,505. Have you taken all that into account in the tables you have put in?—Yes, it is all contained in those tables.

18,506. (*Mr. De Bock Porter.*) In view of the figures you have given, I presume the companies, if left as they are, would not touch the Welsh Scheme?—Not at present, certainly. It might be in the century after next, perhaps.

18,507. (*Chairman.*) Have you authority on the part of the companies to say that, from their view of the future, they will not touch Wales?—I have no authority for saying so.

(*Chairman.*) Then, perhaps, some chairman of the companies will tell us.

(*Mr. Freeman.*) I rather gather from what your Lordship stated just now that you have nearly finished your examination of Mr. Middleton.

(*Chairman.*) Very nearly.

(*Mr. Freeman.*) Of course, your Lordship sees Mr. Middleton's evidence has extended over portions of six days. It is very lengthy and very complicated, and I should ask that we should not on behalf of the County Council be required to cross-examine Mr. Middleton to-day for this reason, that, of course, it is necessary to go through Mr. Middleton's evidence, some of which has been given at different times relating to the same matter, and we are very desirous of not occupying the time of your Lordship's Commission unnecessarily, but at the same time there are several questions we shall have to ask on various points. As I understand, my learned friend, Lord Robert Cecil, is prepared to go on when your Lordship is finished on behalf of Hertfordshire, and, therefore, there would be only a small portion of the afternoon left in which we could begin.

(*Chairman.*) Is there any other witness ready?

(*Mr. Pember.*) I do not know. The witness who has got notice to attend next is Mr. Hunter, but he only

got his notice yesterday, and I am afraid he would not be ready, but he will be ready on Monday.

(*Chairman.*) I should be sorry to waste any part of the day.

(*Mr. Pember.*) Is there any topic after Lord Robert Cecil has finished with which you could start, Mr. Freeman?

(*Mr. Freeman.*) I am not speaking without having carefully considered it, but I really think it would be very much more convenient both for your Lordship's time and for our own if we were allowed to start afresh. Any assistance your Lordship gives shall be taken into consideration in shortening the questions.

(*Chairman.*) We shall be very glad to hear from your cross-examination what it is that the London County Council challenge.

(*Mr. Freeman.*) That is exactly what we want it directed to. Therefore, your Lordship will release us from this afternoon.

(*Chairman.*) Do not take that absolutely, but I will not put any pressure upon you to go on.

After a short adjournment.

18,508. (*Chairman.*) I do not know whether you have sufficient experience of the London water companies to say whether their regulations as to waste, and so on, are efficient and sufficient?—They are not, of course, up to the latest standard. That is certain; beyond that, I can scarcely go. I have not had a large experience in regard to that.

18,509. What do you call the latest standard?—I should say the latest standard is probably the regulations in force at Newcastle.

18,510. Have the London companies power to make the same regulations if they think fit?—I believe so, to the best of my knowledge, they have.

18,511. (*Major-General Scott.*) They have power to apply to the Local Government Board to alter the regulations?—Yes.

18,512. (*Mr. De Bock Porter.*) Have the Newcastle people got a new set of regulations recently?—So I understand.

18,513. (*Mr. Lewis.*) What is the consumption per heard in Newcastle under recent arrangements?—I really forget what it is now.

18,514. Is that an improvement on the Birmingham system?—The Newcastle is a company supply, and that is the reason I referred to it. It is not a corporation.

(*Mr. Pops.*) The London water companies have no independent powers for imposing regulations, they must do it through the Local Government Board.

(*Chairman.*) So I should presume.

(*Witness.*) No company, I should presume, has independent power of making them.

18,515. (*Chairman.*) I presume the Local Government Board always sanctions any reasonable regulations suggested by a company?—I should imagine so.

18,516. Have you any experience yourself of the working of the regulations that exist for the London water companies?—Except as a householder, none.

18,517. Then I had better not ask you about that. Now, we have heard something about the effect of the frost of January and February, 1895, upon the works of some of the London companies. Can you say whether that frost affected the works of any corporations?—Certainly it affected most of the corporations in England.

18,518. Do not say most?—Sheffield, Scarborough, Birmingham, Leicester, Edinburgh, Glasgow, Leeds, Aberdeen, Bradford, Liverpool—all those were affected by the same frost.

18,519. Do you mean that mains burst?—Mains burst and had to be replaced.

18,520. Was that because those mains were not laid deep enough?—That, I think, is scarcely a sufficient reason. I do not think the depth has necessarily any bearing on the question. It is more the soil in which the main is laid than the depth at which it is laid, and the amount of water that is passing through it than the actual depth. In quite adjacent streets a main may be laid in one depth in one sort of soil and the main will not freeze, and a main may be laid at a

greater depth in another sort of soil where it will freeze.

18,521. (*Mr. De Bock Porter.*) Still, the risk is less, the further from the surface they are?—Undoubtedly.

18,522. (*Major-General Scott.*) As a general principle, depth is adopted as a protection, in every place, is it not?—Undoubtedly.

18,523. For instance, in North America the depth is sometimes extremely great?—5 feet 6 inches, I think.

18,524. 5 feet 6 inches or 6 feet?—Yes.

18,525. And it is found, as a general principle, to be effective, is it not; that is to say, we do not have, in North America, a general burst of all the pipes?—But then, in North America, the ground is generally covered with snow, and that makes a very considerable increase in the protection. If we had snow here, it would also increase the protection very much.

18,526. Of course, that would be so. In this latitude, of course, there is a certain depth, is there not, to which the winter cold does not reach?—That is so.

18,527. (*Chairman.*) Have you considered at all the extraordinary variation between the figures that were laid by some of the companies before Lord Balfour's Commission and the figures that were laid before Sir Joseph Pease's Committee?—Yes, I think so.

18,528. I forget now which companies they were?—The New River Company.

(*Mr. Rickards.*) And the Lambeth and Chelsea had something to do with it before Sir Joseph Pease's Committee.

18,529. (*Chairman.*) Can you give any explanation of those extraordinary discrepancies—or, I suppose we shall see the engineers of those companies before the case is closed?—Except as regards the New River Company, where the discrepancies, I think, arose entirely from an original under-estimate of what they were likely to do in the future. They estimated from the past, and they thought they could make a saving on that estimate, but found that experience taught them that they could not do so. Therefore, when they came before Sir Joseph Pease's Committee, they were obliged to extend the figures which were laid before Lord Balfour's Commission.

18,530. But the discrepancy was so wide; it is hardly to be accounted for in that way?—I do not think so, except in the case of the New River Company, which must have been a simple misapprehension altogether.

18,531. (*Sir George Bruce.*) What were the discrepancies to begin with?—The discrepancy, as regards the New River Company pumping, was that the New River Company pumping was put down as being 34 million gallons a day, when they were not at that time pumping 34 million gallons a day.

18,532. That is capacity?—Capacity.

18,533. The present capacity?—No, the capacity in 1893.

18,534. (*Chairman.*) That was the capacity of their Chadwell spring and wells?—Yes.

18,535. You say that was an incorrect representation?—It was not an incorrect representation. The capacity of the wells was that amount, but it was never intended to be represented by the engineer of the company that that quantity could, with the machinery he had at his hands, be got out of the wells continuously, or even for anything more than a very short time.

18,536. What was the right figure instead of 34 million gallons a day?—Somewhere about the supply at that particular time—it was somewhere about 18 million gallons.

18,537. Eighteen million gallons instead of 34 million gallons?—Yes.

18,538. That is a large misapprehension?—A very large misapprehension, but there it is. It was simply a misapprehension. The wells would supply that quantity, but there was not machinery to do it. If you could have run all the machines and the pumps at the same time during every day, they would have supplied that quantity.

18,539. (*Sir George Bruce.*) Then the capacity was 34 millions?—The capacity was 34 millions.

Mr. R. E. Middleton.

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Mr. R. E. Middleton. 18,540. So soon as they chose to supply the power? —So soon as they chose to supply the power, if they had room to do it, but in most of the wells they had not.

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18,541. (*Chairman.*) Was there not room to put the pumps in?—No.

18,542. Then the capacity was not 34 million gallons? —The capacity of supply was 34 millions, but not the capacity of the works.

18,543. (*Mr. De Bock Porter.*) You mean the 34 millions could not be got out?—Could not be got out.

(*Chairman.*) What is the use of 34 millions in the bowels of the earth if you cannot get them out?

18,544. (*Sir George Bruce.*) I suppose if you sunk an additional well or shaft, that would supply the means of applying the power?—Certainly; an additional shaft with additional engine power would have got the whole quantity.

18,545. (*Chairman.*) I do not know whether you have considered the discrepancies in the evidence that was given as to the rate per head?—I have not considered that very carefully.

18,546. Then I will not ask you about that. I do not know whether Sir Frederick Bramwell is going to be called as a witness for any of the companies.

(*Mr. Pope.*) Yes, we hope so.

(*Chairman.*) Then we will ask him when he comes. That is all that occurs to me to ask Mr. Middleton, but if the counsel for the companies think I have omitted anything, they can supply it now.

(*Mr. Pope.*) No, I think not, my Lord, I think you have gone through it very exhaustively.

Cross-examined by LORD ROBERT OECIL.

18,547. There is just one matter I should like to put right with you before I enter on other evidence; that is, about the contention of Hertfordshire in regard to this matter. I think you have rather suggested that Hertfordshire's position is that they would be quite content if they were given the New River supply to supply themselves with, and to hand over the surplus to London?—I do not think I suggested that.

18,548. No, you did not suggest that, but I think that was rather the suggestion made. You know pretty well what the contention of Hertfordshire is in this matter, do you not?—I think you contend, as far as I know, that it all belongs to you, and that you want it all.

18,549. Or rather, is not this the truer way of putting it, that we are perfectly content to let London have all the surplus water—what we say is that London must not draw upon those sources of supply which have from time immemorial fed the county. In other words, that as long as they can take it without diminishing the streams and springs and wells of the county, well and good; but if they diminish those, then we say we have a grievance?—Then I think you have given them a very unlimited supply.

18,550. That we will come to presently, but I merely wanted to put the contention of Hertfordshire right. It is not, in other words, the contention that the 100 or 120 people who are supplied by the New River Company should be secured even with a 20 per cent. margin in their supply for the future, but that the whole county should not be drained for the benefit of London. That is our contention?—That is your contention as I have always understood it.

(*Chairman.*) Does that mean, Lord Robert, that not only must no more water be taken from Hertfordshire than is taken now, but that too much is taken from Hertfordshire even at present?

(*Lord Robert Cecil.*) We say that the limit has been reached. We are, in point of fact, inclined to think that more has been taken from Hertford than is put in by the rainfall. That is our contention.

(*Chairman.*) That too much is taken now?

(*Lord Robert Cecil.*) Certainly no more should be taken than is taken now. Too much is already being taken. That is our contention, but your Lordship sees that that is not quite the contention that has been put to Mr. Middleton before. It has nothing to do with the actual supply from the New River Company in Hertfordshire—it has nothing to do with that.

(*Chairman.*) No.

(*Lord Robert Cecil.*) It is draining the whole of Hertfordshire that we are afraid of.

(*Chairman.*) Yes.

18,551. (*Lord Robert Cecil to Witness.*) Now, of course, you have always said, or at least you have said for some little time, that more might be taken from the Hertfordshire chalk than is pumped at present?—Yes.

18,552. At any rate, not less than is taken now?—Yes.

18,553. Of course, a great deal must depend upon the truth of that proposition, even as regards the price to be paid to the New River Company for its undertaking?—I cannot admit the truth, and, therefore, I cannot admit the rest.

18,554. Of course, I understand you to say it is not true?—Yes.

18,555. But if the unthinkable happened, and you were wrong, that would mean that the New River undertaking was not so valuable as it would be otherwise?—I think not, because they have got other sources of supply.

18,556. But, still, that supply would be gone?—No, the supply would simply remain as it is.

18,557. At any rate, it would not be capable of increase?—If your contention were true, yes.

18,558. I do not wish to put this in any kind of offensive way to you, but what was your experience as to underground water before you acted as Assistant Commissioner to Lord Balfour's Commission?—My experience of underground water was not a very extensive one, but I have been an engineer for a good many years, and I think the matter is one for the most part of common sense.

18,559. Yes, quite so, but your actual experience had been as you have put it?—Yes. In that particular branch I had not had any very large experience.

18,560. Then as the Assistant Commissioner to the Balfour Commission you investigated this chalk water?—I did.

18,561. And you formed certain conclusions at that time?—I did.

18,562. Certain conclusions, if I may venture to put it so, as to the theory of the rain?—Yes.

18,563. And those are the conclusions which you still hold?—They are.

18,564. In other words, your views are founded upon the investigation that you made at the time?—Yes; they are founded on it, and they have been extended since.

18,565. As a matter of fact, when you made the examination, and conducted that investigation, you found that local opinion in Hertfordshire was almost unanimously against you?—It is a little difficult to answer your question quite straightforwardly, but I think if you read the evidence word for word you will find that the local opinion was formed on a basis which had no real foundation.

18,566. You will forgive me pointing out to you that that is not exactly what I asked you?—I know it is not—I quite agree with you that it is not.

18,567. In point of fact, whether wrong or right, local opinion was against you?—That is so.

18,568. That comprised the opinion of mill-owners, watercress growers, and other people, whose industries depended on the natural supply of water in Hertfordshire?—Their own evidence refuted their opinions.

18,569. That may be, but we will come to that in a moment, as to whether that is so or not; but, in point of fact, that was the state of things?—That was so.

18,570. They were, of course, men whose interest it had been all their lives to study this question?—No, I can scarcely say that.

18,571. Surely their industry depended upon it?—In some cases their income depended upon it.

18,572. At any rate, you heard them, and you formed the opposite opinion?—I heard them, and I formed the opposite opinion.

18,573. Both as to the effect of the pumping on the adjacent, and even the distant, wells and streams?—Yes.

18,574. In fact, I think the views you formed were, in several respects, more extreme than those adopted by the Balfour Commission?—They were rather more extreme than those adopted by the Balfour Commission.

18,575. You think that a very much larger quantity of water might be taken from Hertfordshire?—Yes, a considerably larger quantity might have been pumped, certainly.

18,576. And you also think, contrary again to the conclusions of the Balfour Commission, that a similar quantity of water might be pumped from the chalk in the Thames Valley?—Yes; I do think so.

18,577. Now, first let me ask you a question or two about the effect of the pumping on the streams, and first as to a question which I think was put by, I think, the noble Chairman, as to the effect on the Amwell Spring. You know the Amwell Spring, of course?—I do.

18,578. It is the same as what is called the Emma Spring, is it not?—Yes, the Emma Spring.

18,579. There are two pumping stations, are there not, on each side of the Amwell Spring—the Amwell Hill pumping station and the Amwell Marsh pumping station?—Yes, one on each side.

18,580. The Amwell Spring comes up to the surface, flows over some watercress beds, and finds its way into the New River, I think?—It finds its way into the Lea.

18,581. You are quite right. How far are these two pumping stations, the Amwell Hill and the Amwell Marsh pumping stations, from the Amwell Spring?—I suppose they reach somewhere about half a mile, or three-quarters of a mile it may be to half a mile—I am not quite certain of the distance.

18,582. They are pumping stations, drawing their water from chalk wells?—Not entirely, in the case of the Amwell Marsh well.

18,593. No, not entirely, but largely even in that case?—Yes, largely even in that case.

18,584. (*Chairman.*) What else then?—The sand and the gravel overlying.

18,585. (*Lord Robert Cecil.*) And the Amwell Hill?—The Amwell Hill, I should say, was entirely from the chalk.

18,586. Now, I think an experiment was conducted of this nature, that the Amwell Hill and Amwell Marsh pumping stations were set to work, and after a certain period the Amwell Spring was very much diminished—indeed almost dry?—No, it was not almost dry. It was very much diminished. It was stated beforehand that the starting of these two engines would dry the spring, and I was directed to ascertain whether this was a fact, and I made the experiment, and found that the water was lowered to a certain extent in the spring, but that it was not dry.

18,587. I think, as a matter of fact, the wells were not run at their full power?—In the case of the Amwell Hill well, one of the engines was under repair, and it was, therefore, not run quite at its full power.

18,588. How long was it, do you remember?—The experiment?

18,589. Yes?—I think it extended over about 7 hours. I really forget.

18,590. At any rate, a portion of one day?—Yes.

18,591. Not more than one day?—No, not more than one day.

18,592. During that period the spring was so lowered as to be perfectly visibly lowered—indeed, very nearly dry?—No, not nearly dry, but it was very visibly lowered.

18,593. Very considerably lowered?—Very visibly lowered.

18,594. In that case, then, the pumping did have an effect upon the spring?—Certainly.

18,595. (*Chairman.*) If that pumping had been continued, the effect would have been to dry the spring, would it not?—No, I do not think there was the slightest evidence of anything of the kind, it went on and might have gone on at the same rate.

18,596. Do you mean you had reached the ultimate point of diminution?—Yes.

18,597. How soon was that diminution produced?—In about 2½ hours, I think.

18,593. And the pumping of the remaining five did not produce any further diminution?—It did not produce any further effect upon that spring.

18,599. (*Major-General Scott.*) But if you increase the rate of pumping, would not the base of the cone of depression become larger?—If you had increased the rate of pumping?

18,600. Yes?—Yes, supposing that you have lowered the water in the well by doing so, undoubtedly.

18,601. That would be the effect?—But the engines were working, as far as possible, at their full power at the time.

18,602. (*Lord Robert Cecil.*) Are you quite right in saying that the whole effect was produced in 2½ hours?—I think I am right in saying so, but I have not got the figures before me.

18,603. "In the first quarter of an hour the level of the water fell $\frac{1}{16}$ th of an inch, in 20 minutes from 10.45 to 11.5?"—Where is that $\frac{1}{16}$ in.?

18,604. That is at what is called the first station here?—Yes, but those are stations opposite the Amwell Marsh Spring.

18,605. In the watercress beds, you mean?—Yes, in the watercress beds.

18,606. Where are the watercress beds—are not they opposite the spring?—They are opposite the well.

18,607. They are all in hydraulic connexion with the spring, are they not?—Yes, no doubt.

18,608. And supplied by the spring?—From the top, but not from underneath.

18,609. No?—The water runs up over the top.

18,610. I know the water comes up through the spring, flows through the beds and then joins the Lea, does it not?—Yes, that is so.

18,611. Then, when you pump, it dries the watercress beds?—But there are two different operations there. There was the direct effect of the cone of depression of that particular well upon those watercress beds which are exactly opposite to it. There were small springs running all round that well when the pumps were started and those were dried up first and then the water in the small stream running along the opposite side of the road was dried up or partially dried up next, and then the watercress beds further away began gradually to sink.

18,612. (*Major-General Scott.*) The water in the beds?—The water in the beds began gradually to sink.

18,613. (*Mr. Pember.*) How far were they away?—I should think they were about 150 yards to 200 yards.

18,614. (*Lord Robert Cecil.*) This is what I find to be your statement as to the Amwell stream: "The water level fell 1 inch in the first hour and a quarter, from 10.15 to 11.30 a.m., at 12.45 p.m., $\frac{1}{4}$ inch; at 1.57 p.m., $\frac{1}{4}$ inch; at 4.10 p.m., $\frac{1}{4}$ inch." There are no others?—But the spring was still running strongly.

18,615. No doubt, but it had steadily fallen?—That is the water running from the spring—quite true.

18,616. It had steadily fallen to 4.10 p.m.?—No, I think not. There is nothing after 1.57. There is no fall after 1.57.

18,617. There is $\frac{1}{4}$ inch according to these figures?—No, $\frac{1}{4}$ inch, and then opposite 1.57 p.m., $\frac{1}{4}$ inch. There is nothing opposite 4.10 p.m.

18,618. As I have it, it is $\frac{1}{4}$ inch at 4.10 p.m.?—No, there is no figure opposite 4.10 p.m. in the notes.

18,619. It must be so. Look again. At 12.45 it is $\frac{1}{4}$ inch.

(*Mr. Pember.*) Are you quoting from the document itself?

(*Lord Robert Cecil.*) No, I am not.

(*Witness.*) Here is the document itself.

(*Lord Robert Cecil.*) What is the page?

(*Mr. Pope.*) The page is 613 of the Appendices to the Lord Balfour's Commission.

(*Mr. Pember.*) It is Appendix H 1.

(*Lord Robert Cecil.*) There is nothing opposite 4.10 at all there.

(*Witness.*) No, nothing at all.

Mr. R. E.
Middletown.
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Mr. E. (Mr. Pember.) The first fall takes place in the first two hours.

Middleton. (Witness.) One hour and 12 minutes more.

29 Nov. 18,620. (Lord Robert Cecil.) That was, of course, as you have explained, without the full power of pumping?—That was without the full power of pumping.

18,621. There are certain other instances which have been given to me. There is the fountain of Broxbourne—

18,622. (Chairman.) Before we leave that altogether, just explain that to me, Mr. Middleton, if you can. Over two hours pumping at these wells lowered Amwell spring?—Yes.

18,623. That shows conclusively, does it not, that the wells and the spring were supplied from sources that were at least connected?—Yes.

18,624. Why did not that lowering effect continue?—Because the pumping will not take out any more. The water coming into the cone of depression was sufficient to keep up the water running into the spring.

18,625. But the water coming in had come in at the same pace during those 2½ hours?—No, it gradually extends. The cone of depression gradually extends outwards as the water is lowered in the well, and it takes some little time to lower it down to the full pumping level. The spring gradually goes down during that time, and after that it ceases to fall.

(Mr. De Bock Porter.) Was the pumping continued for any length of time, and still no further depression took place?

(Lord Robert Cecil.) It began at 11.10, I think.

(Witness.) It had fallen 1½ in. from 10.45. It began, and it went on till 4.10 in the afternoon.

18,626. (Mr. Pember.) A great fall seems to have been in the first hour?—In the first two hours.

(Mr. Pember.) It fell only in the first 1½ hours, and then it seems to have fallen to a less degree.

18,627. (Chairman.) I own I cannot understand that. I cannot understand how, if the pumping affected the spring at all, the continuance of the pumping should not have continued to affect the spring?—Because the water is coming into the surrounding stratum too fast for the spring to be stopped.

18,628. Then why is not it coming in too fast for the spring to be lowered at all. The coming in of the water is not accelerated by the pumping?—No.

18,629. Then there was the same amount of water coming in at 10.45 as there was at 1.50?—It is only lowered; it comes within the cone.

18,630. Now you put the cone upon me?—The water at the edge of the cone is lowered.

(Chairman.) I am sorry to say I do not know what you mean by the cone of depression.

18,631. (Sir George Bruce.) Is not the head of the water virtually increased when you lower the water in the well?—The head of water running into the well is increased.

18,632. That would account, would it not, for the engine power you have got not being able to continue to lower it?—Yes.

18,633. (Major-General Scott.) The declivity of the water becomes steeper?—Yes, the declivity of the water becomes steeper as you go on pumping.

18,634. The water is lower in the well, and the gradient is steeper from the surface to the water?—Yes, to the bottom of the well to the level of the water in the pump.

18,635. (Sir George Bruce.) If you increase your engine power at that moment in proportion as your head increased, you could continue to lower it?—You could continue to lower it till you got to the bottom of the well, and then you could no longer continue to lower it.

18,636. (Lord Robert Cecil.) In other words, if you had pumped with your full strength for 24 hours, there is nothing to show that you would not have dried the Amwell Spring altogether, as the local evidence went to show?—No, there is nothing to show it, except that the power that we had then was unable to do it.

18,637. And also that the watercress grower who lives in the neighbourhood said that it was so?—But

he could not, unfortunately, support his evidence in any way.

18,638. He said it was so, did not he?—He did say it was so, but he was not able to support his evidence.

18,639. By this experiment it was not tested to its full extent?—I think it was tested to a large extent, but not to the utmost test.

(Mr. Pember.) Which was negatived, so far as it went.

18,640. (Lord Robert Cecil.) Let me just try and test, by one or two more questions, the extent of this universal delusion in Hertfordshire. At Broxbourne there is a fountain in the hotel garden, is there not?—Yes.

18,641. Were not you told, when pumping took place at Rye Common, how far the Rye Common pumping station was from Broxbourne?—I was not told anything about Rye Common pumping station. I was told about the Broxbourne pumping.

18,642. What about the Broxbourne pumping station?—I think it is about 300 or 400 yards.

18,643. Were not you told that when there was pumping going on at the Broxbourne pumping station, the fountain in the garden ceased to flow?—I was told so.

18,644. You did not assent to that?—I found they told me it had not run for several years, and I happened to go there one day, and found it running and the engines running, so that I was not very well satisfied with the evidence.

18,645. You were not satisfied with that?—No.

18,646. Now, there is another stream, to take one more instance, right at the other end of the county—the Bullburn. Do you know the report of Mr. Cubitt, of 1849?—First of all, there is no spring at Bullburn.

18,647. I beg your pardon, I said stream?—There is a stream there.

18,648. Do you know that there is a well that supplies the Grand Junction Canal with water?—I do.

18,649. Do you know that Mr. Cubitt reported in 1849, that he found that pumping from that well dried the Bullburn?—I do.

18,650. How far is the pumping from the Bullburn?—It is quite close by, within a few yards. But allow me to remark that I think that evidence was contradicted in the next year.

18,651. At any rate, it was sufficient evidence for the Courts to act upon it, and to grant an injunction?—That may be, but I think the evidence was contradicted in the next year.

18,652. Now just let me ask you about the Chadwell Spring, because that does not depend upon these isolated instances of pumping. Chadwell Spring, as we have heard, is a spring that comes up and is enclosed in a more or less artificial basin, and then there is a cut that goes from that basin to join the New River?—Yes.

18,653. I put it to you, has the yield of the Chadwell Spring steadily declined since 1875? I want those figures?—I have not got the figures; and, therefore, I am afraid I cannot tell you.

18,654. You have explained to the Commission that you have examined this question most thoroughly?—Certainly.

18,655. Since 1875 it has steadily declined?—No, I think not.

18,656. I put it to you that the average daily flow of that spring in millions of gallons was 372, from 1875 to 1879?—I have really not got the figures.

18,657. You have not gone into this question at all?—I have not got the figures, and I cannot tell you.

18,658. You have not studied the yield of the Chadwell Spring at all?—Yes, I have at different times, but I have not got those figures.

18,659. You have not been into it in relation to the rainfall at all.

(Mr. Pember.) He says he has not got the figures there.

(Witness.) I have not.

18,660. But you did not say you had gone into it?—No.

18,661. (*Lord Robert Cecil.*) Have you got any figures?—I have not got any figures here of the Chadwell Spring at all.

18,662. You have, therefore, not been into that question of whether there is any relation between the rainfall and the decrease of the flow of the Chadwell Spring?—No, I have not looked into that question by itself.

18,663. You will agree with me it would be a very crucial instance, would not it?—No, I do not think so, not entirely. I will explain to you why later on.

18,664. Please do?—I do not think so, because at the present time nobody knows exactly where the Chadwell Spring rises. It has been very generally supposed that it came from the Swallow Holes at South Mimms. Those Swallow Holes at South Mimms are dependent to a very large extent upon the manner in which the rainfall comes down. If there are very heavy storms, the Swallow Hole into which the water runs is filled up, and a very large volume of water runs on into the River Colne. If, on the other hand, it comes down moderately slowly, and the basin of the Swallow Hole is kept full, a large quantity of water flows down into the chalk stratum underneath, and the supply is very much augmented in that way, whereas a very much heavier rainfall extended over a short period augments it very little.

18,665. Then, as I understand you, you say the amount of the Chadwell Spring depends on the condition of the Swallow Holes at South Mimms?—I think that is probable. It is not proved.

18,666. How far is South Mimms from Chadwell Spring?—I really could not tell you without the map.

18,667. No, but you can tell me something like it?—I really cannot say at the moment.

18,668. Is it more or less than 10 miles?—I should think it was considerably less than 10 miles; but I really do not know for certain.

18,669. It is much less than 10 miles?—It is exactly opposite, in a straight line from Woolmer—from the Lea—Woolmer is about five miles above Hertford.

18,670. It is not just opposite Woolmer?—I think it is.

18,671. South Mimms is not just opposite Woolmer, is it?—I think it is.

18,672. South Mimms is a station at Potter's Bar, is it not?—No, it is a long way below Potter's Bar.

(*Lord Robert Cecil.*) Certainly, on the other side.

(*Mr. Pember.*) On the west of Potter's Bar.

18,673. (*Lord Robert Cecil.*) West of Potter's Bar—you are quite right, Mr. Pember—Chadwell being east of Potter's Bar, it is about nine miles on the map?—Yes, quite so.

18,674. You are representing then—and this is a very important piece of evidence—that the amount of rain that falls on the Swallow Holes at South Mimms directly affects the Chadwell Spring?—That I believe. I think it is exceedingly probable, at any rate, and the fact that the Chadwell Spring answers wonderfully quickly to rain storms is, I think, evidence in favour of that view.

18,675. Then it is evident that, supposing there was a well at South Mimms, pumping at Chadwell would affect the well at South Mimms?—No.

18,676. Why not?—That is quite a different view.

18,677. Why would it not?—Because the effect of any well does not extend beyond from a quarter to half a mile towards the source of supply.

18,678. Then I do not understand how there can be a direct hydraulic connexion between the Swallow Holes of South Mimms and the well at Chadwell?—There is direct hydraulic connexion between Oxford and London, and pumping in London would not affect the Thames at Oxford.

18,679. I see, this is the underground river?—Yes.

18,680. Now, just let me ask you one or two more questions about Chadwell, perhaps you will not know this either; but do you know that this year it has sunk, as I think we have heard here, till it was dammed up?—It is dammed up, I know.

18,681. That is, they found that the water, instead of flowing to the New River, was flowing from the New River into the spring?—That is so, I believe.

18,682. And they dammed it up?—Yes.

18,683. Do you know they put a pump into the spring then?—Yes, I do.

18,684. Do you know—perhaps you do not, but I put it to you—that the wells in the neighbourhood instantly began to sink when they began to pump?—No, I never heard that.

18,685. Then you probably do not know that when they stopped pumping in November the wells began again to rise?—No, I do not know it all.

18,686. So much for the springs and streams. Now just a word or two about these wells. I see at Question 14,517 you say this, in answer to a question asked you by an honourable member of the Commission as to how the wells are supplied: "They are supplied from the body of the chalk. In the examination that Mr. Pember has been kind enough to refer to, I found that in many cases the wells were supplied while the river was running alongside of them at a higher level than the water was found in the wells—those were wells which were not fluctuating wells, but just bucket wells." It is my fault, no doubt, but tell me, What do you mean by bucket wells?—Wells from which you draw by a bucket, but without pumping.

18,687. No pumping?—No pumping.

18,688. They are not fluctuating because you do not draw enough?—Because you do not draw enough out of them to make them fluctuate.

18,689. Then there is another expression which you use in another part of your evidence, "seasonal wells." What exactly do you understand by a seasonal well?—One that fluctuates considerably between summer and winter—between a wet season and a dry season.

18,690. It is a question of degree, I suppose?—It is a question of degree. They all fluctuate, but some fluctuate to the extent of many feet, while others fluctuate only to a few inches.

18,691. Now there is one other point in that answer that you gave which I will deal with. Where are these wells that you found close beside the river which did not alter according to the level of the water in the river?—I found them in several places. I really could not tell you exactly where without the map, but I shall be very happy to pick them out and let you know what they are if that will do.

18,692. Very well, you will let us know what they are?—Certainly, I shall be pleased to do that.

18,693. Was the stream there running on the bare chalk, or was it running, as Mr. Francis has, I think, described to us, with an alluvial lining?—It was running on the bare gravel.

18,694. On bare gravel?—In most cases. In some cases on apparently bare chalk, but no doubt it must have been puddled in some way. There is no question about it, or the effect could not have taken place, only that there was no apparent puddling.

18,695. That does not come to very much, does it. All that comes to is, that the streams may puddle themselves in such a way that the water from the streams does not get into the chalk?—I think it does. I think it goes a very long way. It is always the case, or almost always.

18,696. But you do not dispute that the water in these streams eventually comes from chalk springs, do you?—Some of it.

18,697. All of it, except just the flood water?—The flood water is a very large portion of the whole.

18,698. All the water that comes from springs at all comes from chalk springs?—From chalk and gravel springs, yes.

18,699. Then here it is not puddled?—Because the pressure is towards —

18,700. No, no, I quite agree, the reason is obvious, but it is not puddled?—No, it is not puddled.

18,701. Therefore, if you sank a well, you would find the water at the same level as the water in the chalk springs?—Yes, certainly.

18,702. Assuming the fact that you find wells by the side of these puddled streams, where the water is at a different level from the springs, I do not appreciate at the present moment what conclusion you seek to draw from that?—Because it has been suggested on several occasions that the water which supplied these rivers came from the chalk springs, and obviously it does not,

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29 Nov. '98 18,703. I do not follow that in the least. It comes from the chalk springs, as you have told us, or a certain portion of it, higher up the valley?—Not necessarily at all. It comes from the seeping of the banks to a large extent.

18,704. But as far as it comes from the chalk at all?—Certainly, as far as it comes from the chalk at all, it comes from other springs further off.

18,705. You do not suggest that any considerable portion of the streams, other than the Stort, are anything except chalk streams in the main?—Yes, they are, indeed. There are very considerable quantities of flood water coming down in many of them, and seepage comes in to a large extent.

18,706. In dry weather it must be all chalk water, must it not?—No, not all.

18,707. Almost all?—No, not all.

18,708. Where does the rest of it come?—The seepage—the ordinary flow of the stream through an agricultural country, where there is soil, will be so much even in the driest year.

18,709. You are not seriously representing to the Commission that the great mass of water coming down the Lea comes from the drainage of the agricultural soil, do you?—I am not suggesting anything of the kind.

18,710. What are you suggesting?—I am suggesting that a certain proportion of it does.

18,711. Of course, a certain proportion of it does, but does not most of it come from the chalk springs?—It is a larger proportion than I think you would reckon on.

18,712. What proportion is it?—You may reckon that there would be something like, in dry seasons, one-eighth of a cubic foot per thousand acres per second coming from seepage.

18,713. I do not know whether that conveys any information to the Commission; I am afraid it does not to me. The point is, what is the proportion of the stream, that is the point?—That I could not tell you without calculating it out.

18,714. But surely that is the material thing, is it not?—I mean, one-eighth of a cubic foot per thousand acres of agricultural land per second tells you nothing at all?—Per second.

18,715. (*Major-General Scott.*) How many gallons a day would that mean from 1,000 acres?—About 35 gallons, I think, per thousand acres per second, or something like that.

18,716. (*Lord Robert Cecil.*) Per second or per minute?—Per minute.

18,717. Then, of course, it depends upon how many thousand acres drain into each particular stream?—Certainly.

18,718. At each particular place?—Certainly.

18,719. Have you made any experiments or investigations to find out how much of the Lea is chalk, and how much of the Lea is just drainage?—I do not think any amount of experiment would prove it.

18,720. So I [should have thought?—You only can do it by comparison with other rivers in which there are no chalk springs.

18,721. The conditions there may be very different?—They will have the same banks or more or less the same banks giving off water at all times.

18,722. However, the fact remains that so much of the water as comes from the chalk is, you admit, I understand, now in hydraulic connexion with the rest of the water in the chalk?—Certainly.

(*Chairman.*) Yes, but he does not admit that the hydraulic connexion is such that pumping in the well will diminish the water in the springs at any distance.

(*Lord Robert Cecil.*) No, my Lord, I quite agree, but that is a second proposition. There is a certain school of thought who have been taught to say that there is no connexion between the chalk water coming into the streams and the chalk water coming into the wells, but that they are quite separate things.

(*Witness.*) I quite admit that where there is a spring clearly running into a stream that chalk water is in

connexion with the stream. In many cases the chalk water rises above the level of the water in the river and does percolate into the river, but in a great many cases, on the other hand, the water in the chalk is lower than the river, and cannot therefore reach the river.

18,723. That is a different proposition?—I think that is, exactly.

18,724. The point that is material, at any rate for my purposes, is this: do you or do you not admit that the water that the New River pumps from the chalk wells is in hydraulic connexion (I do not say it flows from one to the other), with the water that comes out of the chalk springs or the streams in Hertfordshire. That is the point?—It is in connexion with the water contained in the great body of the chalk.

18,725. And the springs are also in connexion with the water contained in the great body of the chalk?—Undoubtedly, certainly.

18,726. Therefore I quite understand you to say that it does not affect the springs pumped from the wells?—Yes.

18,727. But you admit there is hydraulic connexion between the two?—Yes.

18,728. Now, before I go on with that for a moment, I just want to ask you about one or two wells, I will not take you at any length through them. In the first place, you refer to some wells in your answer to question 14,534. You refer to some wells in the gravel at Ware, and you were not able to identify those. Where are those?—They are wells not very far from the highest pumping station on the New River, the name of which at the present moment, I forget.

18,729. Cannot you tell me what they are called?—No, I could not. I could get it from my lists, but I could not tell you at the moment what they are called.

18,730. Will you undertake, when you get the other information you have promised us, to get that information also?—Certainly I will—with pleasure.

18,731. Now you were asked about the Haileybury Well?—Yes.

18,732. At question 14,541 you were asked by an Honourable Member of the Commission about it, and somewhere else you were asked?—At Question 14,538.

18,733. By the noble Chairman you were asked "then 'that the well at Haileybury College is pumped 'down'? (4) That I do not believe. I do not think "that is true, but that I cannot speak to, because I "have not tried it"?—Yes.

18,734. How far is the well at Haileybury College from the nearest pumping station? How far is it? Do you know or shall I suggest a figure to you?—It must be at no very great distance.

18,735. A mile and a half?—Yes, as far as I remember it is about that.

18,736. Between that and the pumping station there is another well, is there not, the Haileybury Lane?—I do not know that.

18,737. I see there are a good number of pumping stations within two miles of Haileybury College, Broadmead, Amwell End, Amwell Hill, and Amwell Marsh, Rye Common and Hoddesdon. You say you do not believe that there are any?—I do not think that it is likely to be true.

18,738. Now let me just suggest to you these facts with care, and let me see whether you believe this: "During the month of November last the water level "in our well fell very notably and suddenly" (that is the Haileybury College Well), "and on making inquiries "it was found that the contractors were at work "cleaning out the New River Well at Rye Common, "1 mile and 550 yards distant. In order to do this, "the pumps were going day and night, and kept the "water about 30 feet below its usual level in the well, "so as to lessen the pressure upon the divers. This "continued for two or three weeks, but as soon as this "extraordinary pumping ceased, our water very "quickly rose again to its normal level." Is that credible?—I think only the engineer of the New River Company could answer that, but I do not know anything of the circumstances.

18,739. (*Chairman.*) But assuming those facts to be true—assuming that those are the facts—should you admit that your pumping had affected it?—It would

appear, of course, that the pumping had affected it, but I do not think it is likely the pumping would affect a well at such a distance.

18,740. You think the facts are probably inaccurately stated?—I think they are inaccurately stated, that is all.

18,741. (*Mr. Mellor.*) You would not like to lay down any general rule?—I cannot. It is impossible to lay down a general rule on the subject.

18,742. (*Lord Robert Cecil.*) You tested about 108 wells, I think, in 1892?—Yes.

18,743. Have you tested any of them since?—Some of them.

18,744. Have you tested them all?—No, I think not all.

18,745. When did you test them last?—About the end of 1895.

18,746. What time of the year was that, because, of course, that is material?—March 1896 was the time I tested them.

18,747. When did you test them in 1892. They varied, I know?—They varied all over the time. It began in March and ended in March of the next year.

18,748. I suggest to you that in 1896 we also tested them, and I suggest to you that they were universally lower in 1896 than they were in 1892?—At the time that I took them they certainly were, in many cases, considerably higher.

18,749. March, of course, would be a high water time?—March would be a high water time, but then, of course, I tested a good number of other ones in March also.

18,750. I think most of them were tested either in February or June, I think?—There were a good number of them in March.

18,751. I do not think I need ask you any more details as to the particular wells or particular streams. The Commission will understand, I do not ask about more wells because it does not carry it any further. Mr. Middleton says he does not know, and that is the end of it. I have a good many more special wells which I could put to him, but it is not necessary to carry it any further. (*To the Witness.*) At Question 14,578 you say this—you begin, and it goes on to describe what I may call the more general part of your theory, and Mr. Pember puts this, I suppose more or less with your assent after General Scott has asked you, "Does he assume that there is a separation between the water which feeds the springs which flow into the Lea, and this particular amount of water which runs in these subterraneous passages?" (*Mr. Pember.*) Yes, no doubt. (*Major-General Scott.*) A separation. (*Mr. Pember.*) Not a separation; but if the water in the chalk gets up to a certain level, where it can escape from what we may call, I suppose, a more superficial fissure than the low channels of which he is speaking, then it might issue into the open air, and find its way down into one of the streams; and if, as Mr. Middleton says, you happen to tap that particular fissure by a well, you would deprive the Lea or the Thames, as the case may be, of that particular supply of water." Does that represent the kind of theory which you put forward?—So far as it goes, it is perfectly true, I think.

18,752. Now, I should like to get it quite clear, supposing water falls on the chalk at Ware, or above Ware, what exactly happens to it according to your theory?—We believe it falls—it passes down into the chalk and the earth, the permeable stratum above the chalk; it passes more or less vertically downwards till it reaches the water-bearing stratum below, and then it begins gradually to travel towards the sea from there. The chalk is not, as has been so often stated, a large reservoir so much as a big river travelling at a very slow rate. A reservoir would stand at one general level, whereas the water in the chalk, as we well know, stands at very different levels.

18,753. That is, of course, quite clear—at very different levels indeed. In the chalk under a hill the water would stand much higher than it would in the chalk under a valley. It varies to some extent, according to the line of saturation, as it has been called—according to the surface of the ground. Is not that so?—It has a tendency in that direction.

18,754. That is because the water cannot flow quite freely through the chalk, and takes a long time to find its own level. That is what it comes to?—That is so.

18,755. So that whether you adopt the reservoir theory or the stream theory, that would be the case in any case; you always have these differences of level, at any rate?—It would not be so if you have the reservoir theory, because the reservoir is always level, of course.

18,756. No, it would not be. I thought you just now admitted, in answer to me, that it would not be level in any case?—Because it is a stream.

18,757. No, because the water takes a long time to find its own level?—But that is the same thing—that is merely saying it has to find its own level.

18,758. (*Major-General Scott.*) Would there be any objection to adopting a mixture of both theories?—In what way?

18,759. A very large reservoir with a motion of translation in the water to a lower level impeded by friction?—Certainly, out is not that to say a very large river travelling at a very slow speed?

18,760. Instead of a reservoir?—Instead of a reservoir—that is all.

18,761. It is still a reservoir?—You may call it a reservoir, but so is every river a reservoir.

18,762. (*Lord Robert Cecil.*) Would it be in the least like a stream, because you find the water in that case travelling in different directions, according to the slope of the ground?—So it is.

18,763. Therefore you cannot call it a river?—It is a river. Surely the river does exactly the same thing.

18,764. But you do not find the Thames travelling both east and west?—No.

18,765. But you may easily find the water in the chalk under a hill flowing both east and west?—So you find in the ground above—flowing from the dividing line both east or west or north or south, but they do that above ground as much as below.

18,766. But at any rate, it is not all one river if you are going to make any analogy at all between the river and the water in the chalk—it is a series of rivers?—Surely that is the case in any overground river.

18,767. But I thought you represented it as all one river?—It is a succession of minute streams congregated in the end to form a gigantic river.

18,768. (*Mr. Mellor.*) Is it your theory that the chalk is full of holes?—Full of fissures.

18,769. Pockets?—No, as a rule, of small fissures. The pockets, as a rule, do not extend much below the surface.

18,770. What about artesian wells; are there any natural artesian wells in the chalk, in your opinion?—Not in the chalk, or very few of them.

18,771. (*Major-General Scott.*) In a flowing river, if you were to abstract water very rapidly from a particular spot in that river, would not you get a declivity all round the spot where you were abstracting the water?—Undoubtedly. It is exactly as you do in the chalk. If I may illustrate that, you may take a non-canalized river—because a canalized river is an unfair example—and pump that river perfectly dry, if there is sufficient pumping power to pump it dry at any season of the year, but during the winter there would be a quantity coming down and the pumps would have to work hard to keep it under and take it away. Above the pumping station the water coming down is absolutely the same and will remain the same except as affected by seasons to the end of time. It will not be affected one ounce or one gallon by the pumping, whereas below the pumping station the river will be dry until the water creeps into it from natural seepage through the sides.

18,772. You say, if the quantity you pump out is greater than the whole quantity that comes down into the river, you may work the pumps harder, but you cannot get any more out?—That is just the point. You cannot take more than comes down. You may run the pumps harder, but you will not get any more out.

18,773. (*Lord Robert Cecil.*) Let me just follow that for a minute or two more about your general theory. You say the water flows from the chalk towards the sea?—Yes.

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Mr. R. E. Middleton. 18,774. I think you have already said you cannot tell exactly where it does that?—No, I cannot.

29 Nov. '98 18,775. Can you say generally where it flows?—It flows down the valley of the Lea more or less.

(*Lord Robert Cecil.*) Might I ask Mr. Middleton to look at the geological ordnance survey, with your Lordship's permission, to make the witness's evidence more clear. There you have a band of chalk going in a line from north-east to south-west. Is not that right?

(*Chairman.*) Which is the chalk—the blue.

(*Lord Robert Cecil.*) The light green—from north-east to south-west.

(*Mr. Mellor.*) The blue is the stream, is it.

18,776. (*Lord Robert Cecil.*) Your Lordship sees at Ware and Hertford it comes down into London in a straight line due north and south from Ware at the edge of the chalk. The brownish colour is the London clay. The Lea draws its water from a series of tributaries which come up from Hertford to the surrounding chalk. That is right, is it not [*referring to the map*]?—Partly through the chalk and partly through the clay up to Stevenage.

18,777. The only important river coming over the clay is the Stort?—No, a good deal of the Bean comes over the clay.

18,778. Which is the other important river?—The upper part of the Bean comes over the clay.

18,779. Is that right?—Yes, from Stevenage, as you see.

18,780. But Stevenage is all on the chalk?—I think not. It is covered over with a great band of clay there.

18,781. You mean just little pockets of clay there?—It is covered over with a considerable band of clay there.

18,782. But substantially it is all chalk there?—Yes, there is chalk underneath, undoubtedly.

18,783. Water falling, therefore, on the Hertford chalk there goes towards the sea, you say?—Yes.

18,784. That is to say, it goes south and by east?—Yes, south and by east.

18,785. It looks as though some of it would go under London?—Probably some of it does go under London.

18,786. I think I understand your theory, but I may just put it to you so as to be quite sure, you say that, whether you regard the body of the chalk as a reservoir or a stream, the water from that chalk outcrop flows away under the clay somewhat in the nature of a stream?—Yes.

18,787. Towards the sea?—Yes.

18,788. You say, therefore, any pumping below the outcrop of the chalk cannot diminish the amount of water in the chalk?—No, that is not so. Of course, it diminishes the amount of water in the chalk.

18,789. Of course, I mean in the chalk where it crops out?—Where it crops out, no. The water flowing down to that will always remain the same, except as affected by seasonal changes.

18,790. Now, does not that theory depend upon this, that the outlet to the sea must be as free as the inlet from the chalk?—No.

18,791. Just let us see whether that is not so. If the water cannot get away into the sea as easily as it comes in, it is evident that, if you increase the ease with which it can get away from the chalk, it must be that you diminish the quantity in the chalk near the inlet—above the inlet?—I think not.

18,792. Just follow that in your analogy of a river. Supposing there is a river with a comparatively small outlet, so that the water is high in it—canalized, if you prefer to put it so?—Yes.

18,793. Supposing you increase the outlet, you diminish the height of the water above you, do you not?—The sea level is unfortunately a constant thing, and, therefore, the increase in the size of the outlet would not materially lower the level of the water in the river.

18,794. You surely do not seriously mean that, Mr. Middleton. Taking the extreme case of a lake, such as the lake of Geneva, or any other lake you like in the world which has an outlet. If you increase the size of that outlet you lower the lake, of course?—But

that is not increasing the size of the outlet into the sea. The sea is a thing that stands at, more or less, a permanent level, fluctuating from day to day.

18,795. It is increasing the outlet into the sea, with great respect to you?—Yes.

18,796. That is to say, more water gets into the sea? No, you do not alter the level.

(*Mr. Pember.*) Only to start with.

18,797. (*Lord Robert Cecil.*) Certainly, I agree with you—to start with, till you have dried up Hertfordshire?—It would not dry up Hertfordshire.

18,798. I agree, you cannot draw more water out than comes from the sky, and the question is, whether you cannot lower, eventually, the natural lake—that is at present, below Hertfordshire—that is the whole point?—That is the point.

18,799. (*Major-General Scott.*) If you have freed the outlet to the sea with the same head, the discharge would be greater, would it not?—No. If you have got the river behind you, the discharge must remain the same from year's end to year's end, surely. If you put a dam in it the water going over that dam must be the same, although it flows over it at a higher level.

18,800. But if water is discharged from the chalk into the sea, and there is an outlet below the level of the sea, and there was a head on it, it would still discharge?—It would still discharge, certainly.

18,801. If you enlarge the aperture, keeping the same head, the discharge would be increased, would it not?—Keeping the same head.

18,802. (*Lord Robert Cecil.*) That is exactly the point. Consider for a moment, if you will, a pipe from a cistern. It is quite true, if the pipe is perfectly free, with perfectly the same level or the same width with the same flow all the way down, if you pump from the pipe, you will not diminish the quantity that is coming out of the reservoir, but if the pipe is not perfectly free, if it has got a tap at one end, for instance, or anything which closes its orifice at one end, and you put in another junction, so as to avoid that tap, it is evident that you will pump down the reservoir more quickly—you will let down the reservoir more quickly?—You are still coming back to the same question of the reservoir, and it is not a reservoir. It is a stream.

18,803. But that makes no difference, I think?—It does. If you enlarge, as General Scott has said, the aperture into the sea, you would reduce the level immediately above, exactly as I said; the level would be reduced in the case of a non-canalised river by pumping out all the water in the river, but it only extends for a very short distance, and you must put in more wells and go further and further back, if you want to reduce the level at a very high point.

18,804. I am very anxious to get this clear, because this is the whole crux of the difference between us. Is it not true—to go back a little so as to try it once again—that with the streams from the chalk, or overflow from the chalk, you do not get a spring till you get the chalk underneath full of water?—That is so.

18,805. Then in that sense—I do not care a bit about any other sense—the chalk is a reservoir which overflows into the stream?—Yes, it is a big river overflowing into another.

18,806. I do not care. Call it a river, if you like, but in that sense it is. Say you have 100 million gallons, to give a figure, going into a particular area of chalk, and 20 million gallons, according to you, go down, or 50 million gallons go down by a stream, or 50 million gallons go down by the subterranean river down to the sea; if you enlarge the subterranean river so as to take 70 million gallons, you have only 30 million gallons going to the sea. Is not that clear?—No, I do not think that is true. I think it might be for a very short distance partially true.

18,807. It is because you cannot accept my hypothesis, but it must be true if you accept my hypothesis?—Unless you enlarge it the whole way up, so as to decrease the gradient.

18,808. That is what I feared you were doing—you were not accepting my hypothesis?—No, I was not accepting your hypothesis.

(*Lord Robert Cecil.*) Then we shall never get to the end of the examination if you answer questions which I do not put to you. My whole point is this—you have an outlet under ground.

(*Chairman.*) Now you put an outlet to him, but Mr. Middleton says, if you enlarge the outlet the whole way up.

18,809. (*Lord Robert Cecil.*) That is the question I ventured to put to him the whole time. If the outlet from this underground stream that exists is smaller than the inlet, it is quite evident that if you take water in the course of the stream you substantially and in substance enlarge the outlet; that is to say, if the capacity of this river depends upon any particular narrow gut, if you take water above that gut you will increase the flow from the reservoir which supplies it. It must be so. Is not that right?—I do not think it is quite right, unless you can increase the orifice all the way up. I do not think it will be true.

18,810. It is quite evident that if the orifice all the way down is the same size, my observation is not well founded; but if the orifice at the top is larger than the orifice at the bottom, then it is quite evident that my observation is well founded, is not that so?—No, I think not, unless you have got more water than the orifice at the bottom will take.

18,811. That I agree. You want that, too, supposing the orifice at the bottom, therefore, will not take all the water that is coming in at the top, it is evident, if you take the water half-way down, you are taking more water from the reservoir at the top?—No, I think again you are not. You are taking more water from the actual spot where the water is taken, and you are reducing the level of the water below that point, but above, not.

(*Lord Robert Cecil.*) I despair of making my point any plainer than that.

(*Chairman.*) This is Mr. Middleton's view. Lord Robert, although I do not know whether you will accept it. He says, here is a river and a certain quantity of water, according to the seasons, coming down. Whatever quantity you pump at that point, exactly the same quantity of water will come down to that point.

(*Lord Robert Cecil.*) That is perfectly true.

(*Chairman.*) That is his whole contention.

(*Witness.*) I should not dispute that; that is all my contention.

(*Lord Robert Cecil.*) My whole point is this—

(*Chairman.*) I think I understand your argument. You say, very true, here is a river running down. The river is choked and damned here, and consequently there is a certain heading back of the water. If you leave the outlet here, then that heading back will disappear.

18,812. (*Lord Robert Cecil.*) That is the point. Then I will not trouble about it further. In point of fact, it all depends upon this—there being an unobstructed flow under the London clay—the London clay being that brown mass on the map, if we can show there is not an unobstructed flow under that, it is evidence that whether there is a flow to some extent or not, the more you increase the outlet near the outcrop of the chalk, the more you increase the outlet for that water, it is evident you must reduce the water?—I think not. I am afraid I cannot agree to that.

(*Chairman.*) If your outlet is choked, as compared with the inlet, there must be a certain heading back; but how far the heading back will extend depends upon a variety of considerations, which I cannot solve for the moment.

(*Lord Robert Cecil.*) It is not even absolutely true, on Mr. Middleton's own showing, that it is comparable with the river, because you can raise a river indefinitely high. You cannot raise an enclosed water channel indefinitely high, because you are stopped by the top of the channel, and, therefore, if you head it back ever so slightly it will gradually fill.

(*Chairman.*) Yes.

(*Lord Robert Cecil.*) Does your Lordship follow me?

(*Chairman.*) Perfectly.

(*Lord Robert Cecil.*) If your Lordship follows me, it is not like a river which will only head back a certain distance and flow over the sides. It cannot do that. It will head back, and when headed back it will flow on, we will say, down the stream. If you take it from any part in its course, then, the constriction, if I may so put it, it is evidence that you will diminish the overflow down the stream. That is the point.

(*Chairman.*) If your theory is right, it seems to me that before the New River Company's wells were sunk, the water in this chalk ought to have overflowed Hertford and reduced it to a marsh.

(*Lord Robert Cecil.*) At present, my Lord, there is no very considerable—

(*Chairman.*) With all your choking, and with no addition to the outlet, there would be a perpetual heading back.

(*Lord Robert Cecil.*) It is quite true there would be a much greater quantity going down the Lea, and I think, if it becomes necessary, we can show that that was so, and there was a greater quantity than at present. But your Lordship will recollect they only take about 22 million gallons.

(*Chairman.*) Was the flow of the Lea so very enormous?

(*Lord Robert Cecil.*) No. However, fortunately for us, it is a very small matter. They only take about 20 million gallons at the present time by pumping.

18,813. (*Chairman.*) I suppose that is true, Mr. Middleton. Supposing, instead of an open river, you had got an enclosed canal, very tortuous and winding, and you blocked, say, the outlet of the canal, you would head back the water?—Undoubtedly. It must find an outlet as it piles up from the back; if you put down a well there and relieve it by means of a well you would keep back the overflow, but you would not affect the stream above.

18,814. (*Mr. Mellor.*) You take from the water that would otherwise run away?—Yes, that would otherwise run away. That is all.

18,815. That is your theory?—That is it.

18,816. (*Chairman.*) You prevent the water being headed back, as it were, to this inlet?—Not headed back to this inlet, because it would head back to the place where it would get a free vent—that is the edge of the clay—and then burst out.

(*Mr. Balfour Browne.*) It was headed back to where it found an aperture in the stream. Lord Robert says; an artificial aperture is now given to it by the wells.

(*Lord Robert Cecil.*) That is it.

18,817. (*Major-General Scott.*) May I ask this question. Supposing there was a surface spring near the Lea, within the radius of a cone—an ordinary cone—and you sank a well close to that spring, and assuming that that spring overflowed and went into the Lea, and you pumped from the well, then according to your own admission regarding the extent of the cone, that spring would probably disappear?—Certainly.

18,818. Then, to that extent, a tributary of the Lea would be extinguished?—Certainly; undoubtedly within the cone of depression there must be so much taken out, but it does not extend beyond it, except below. There is so much less in the stream below the well, but there is nothing less in the stream above.

18,819. (*Chairman.*) Does it extend above the cone of depression?—Yes, above the cone of depression. The cone of depression is a variable quantity. Most of the experiments I have made give it a gradient of about 1 in 10 on the upper side, but sometimes it is flatter than that, but with 1 in 10 with 300 feet you would have 3,000 feet—three quarters of a mile, or something like that.

18,820. (*Major-General Scott.*) If you extended that and had a series of springs along the Lea, and a series of wells, and all those springs had originally run into the Lea, then you admit that there would be a depletion of the Lea by pumping?—Undoubtedly. I cannot help admitting it. It is obvious.

18,821. Then it is a question how far that local effect would extend?—Certainly, and the only case I know of is the particular case at Amwell Spring—that is the only case of any importance that I know of.

(*Chairman.*) Does your theory go much beyond that, Lord Robert?

(*Lord Robert Cecil.*) Certainly, very much beyond that. I say that is only the fringe of the difficulty. No doubt the first effect of pumping in the chalk is to create a cone of depression, and that goes on till you have cut by your cone of depression a sufficient number of fissures in the chalk, if you like to put it in that way, to supply the draught you are making from the well. I do not know whether your Lordship follows that?

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(Chairman.) Yes.

18,822. (Lord Robert Cecil.) When you have done that, you are drawing then, as we say, straight from the body of the chalk. You have got a sufficient area to tap the body of the chalk, and it is obvious, as you go on pumping, and the cone of depression not increasing in size, as Mr. Middleton says, the water must come from somewhere, and it comes from all round into this cone of depression. It comes from the general body of the chalk. (To the Witness.) I suppose we will be agreed on that so far?—Undoubtedly. It comes from the general body of the chalk.

(Lord Robert Cecil.) Then I say that the whole of Mr. Middleton's theory depends upon this, that instead of it being a reservoir, or, as I should prefer to put it, a reservoir with a leak in it, it, he says, is an underground river. That is the whole difference between us, and it all depends upon whether there is a free and unobstructed flow of water under the London clay to the sea. That is the whole point.

(Chairman.) But you must put it with a reservoir with a pipe filling it.

(Lord Robert Cecil.) Certainly, from the rain your Lordship means?

(Chairman.) Yes, the rain on the upper chalk.

(Lord Robert Cecil.) Certainly. I am including the whole of the chalk.

(Chairman.) Then the whole of the difference between you and Mr. Middleton is that he makes it a continuous river, you make it a river with a sort of lake in the middle.

(Lord Robert Cecil.) Certainly, it makes the whole of the difference. Otherwise there would be no overflow down into the stream. My point is that if you lower the level of the water in the chalk you will destroy the stream eventually. I agree it will be a gradual process, but you will lower them first and then destroy them altogether—all the surplus water and the water in the wells too.

(Witness.) I wish to point out that you do not lower it except within the limit of the cone of depression. You may go on from now till Doomsday, but you cannot lower it above. Also—and I think you will excuse my saying so—I think that the effect on the opening of the fissures in the chalk is not quite the same as is suggested. If a well has been pumped some time, and the fissures are thereby increased, and the water comes more easily to the well, the effect is for the water to rise in the well, and the load on the pumps is somewhat lightened, but so long as you take the same quantity of water out, the cone of depression is narrowed, and not extended thereby. If you increase the quantity of water taken out, the level is reduced to the same point that it was before, and the cone of depression is increased, and the quantity of water taken from that well would also increase; but under the condition Lord Robert has given, that is, simply the opening of the fissures, the effect is simply that the water would rise in the well and the pumps would be relieved of some of their duty.

18,823. (Lord Robert Cecil.) I quite agree with that. I do not think that there is anything substantially different from anything that I have said. When you have got to the right side of your cone of depression, the water comes from the general body of the chalk, and no longer comes from the immediate neighbourhood. It comes generally from all round the cone of depression. Is not that right?—Yes, certainly, but that cone of depression is for all practical purposes a weir.

18,824. Certainly, but that is all the same point—it is the question of an underground stream. Therefore, it really does come down to that, does it not, that the truth of your theory must depend upon whether the flow through the chalk under the London clay is sufficient to account for all the water, plus the streams, I should say, that falls on the chalk and is equally unobstructed in its course?—No, I do not think that is true, because above Hoddesdon we have got no London clay at all, and, therefore, the same effect cannot take place there. You have got the open body of the chalk.

18,825. No, I am dealing with the chalk under the London clay?—But the two things hang together. It is not one thing.

18,826. Then go on?—The pumping effect that I am speaking of, if you take it into the bare chalk, will act exactly in the same manner as I have described before.

18,827. The great majority of your wells, I think, go through the clay into the chalk, do not they?—There are three or four which are in the chalk alone.

18,828. That is so, but I do not think that matters. I do not understand that you now dispute—and I am sorry to put it over again, but it is the foundation of the whole of my argument—you do not dispute now that it all depends upon that, whether you have got a free and unobstructed flow under the London clay?—No, I do not think it depends upon that at all, because we know, as a matter of fact, you have not. We know, as a matter of fact, that it must be restricted to a certain extent, and that it is restricted wherever the chalk is, because the chalk gives off water exceedingly slowly, and the gradient could not be kept under the chalk permanently unless it were so.

18,829. I think I have put my point to the Commission as to that, and I now want just to test your theory of the stream going under the London clay. Have you carried out any experiments, or measured the wells through the clay? There are a great number of them in Essex and East London?—With what view?

18,830. With a view of seeing whether there is any sign of an unobstructed flow under the clay?—I have got measurements of them, but I have not measured them personally myself.

18,831. But have you investigated that point?—I have to some extent.

18,832. It is a very important point to you, is it not?—It is.

18,833. What are your investigations?—It is quite clear, in London itself, that the water in the chalk has been depleted so that the friction prevents the water getting to the pumps with the same rapidity as that with which it did aforesaid.

18,834. Then it is perfectly evident that there could be no flow under London towards the sea?—No flow, because it is all being taken out by the pumps.

18,835. By the pumps in London?—Yes.

18,836. (Chairman.) Do you mean private pumps?—Yes.

18,837. (Lord Robert Cecil.) What is the extent of the pumping? Let us take those north of the Thames, because the south of the Thames is probably affected by the Kent pumping?—Probably about 10 million gallons a day.

18,838. It is not a very large amount?—It is not.

18,839. That is sufficient to cause a permanent depression under London?—Certainly.

18,840. No unobstructed flow of the stream under London then?—Certainly not.

18,841. Have you investigated under Essex?—So far as I have been able to go; but the information in that district is very scanty.

18,842. What is the result of your investigation?—So far as I can judge, the probabilities are that the water finds its way into the Thames somewhere about Purfleet; but there is no absolute evidence on the subject.

18,843. What makes you judge that then?—Because there is a fault in the chalk near by. There are considerable springs at Purfleet, and there are also considerable springs at Erith.

18,844. Have you tested the wells between Purfleet and the Lea Valley with a view of seeing whether there is any probability whatever that the water that feeds these springs comes from the Hertford chalk?—As a matter of fact, there are scarcely any wells at all in that district between Purfleet and the Lea Valley.

18,845. There is a considerable number is there not, of wells all over Essex?—All over Essex there may be, but I think not in that particular district. There is too much clay. It is too thick a bed of clay.

18,846. What is the bed of clay in Essex there—about 300 or 400 feet, is it?—In some places about 300 or 400 feet, and in some places it is much shallower. But it is in all parts there, except where the chalk crops out, pretty thick till you get past Purfleet,

18,847. Unquestionably the effect of all that weight of clay superimposed on the chalk would be to crush it together, would it not?—Certainly.

18,848. So as to make the fissures, the porosity of the chalk, much less than where it is open?—Certainly.

18,849. A much less flow of water through that chalk than in the chalk where it comes to the surface, where it crops out?—Much less liberty of flow. That is to say, it takes a larger area to get the same quantity of water.

18,850. Right along the north-western edge of the clay is the chalk, is it not? Here is the map, let me show it to you. Is it right along from the extreme edge of the map to the other extreme edge of the map?—The chalk.

18,851. Yes?—Yes, this band is chalk—that is true.

18,852. Therefore there is water, according to your theory, perpetually filling in from the chalk all along there under the London clay?—Under the London clay, but the London clay edge does not begin till down here—it begins just here [pointing on the map].

18,853. That is the Ordnance Survey?—Yes.

18,854. Be it so; the London clay begins a long way to the south-west of Hertfordshire?—Yes. The London clay begins close by Hoddesdon.

18,855. But I mean it extends all the way?—Yes, it extends, certainly.

18,856. Therefore all along the south-eastern edge of the chalk in Hertfordshire there is London clay, is there not?—Yes, that is so, except where the chalk breaks out, as it does.

18,857. I know there is a bed of London clay lying on the top of the chalk there?—Yes.

18,858. Therefore all the water, if you are right, that flows from the Hertfordshire chalk into the underground river has to pass under this London clay?—Yes.

18,859. Every drop of your underground river must go under the London clay?—Yes, except what is forced out between the junction of the clay and the chalk.

18,860. Except what comes out in springs and streams?—What is forced out in that way—and therefore comes out in springs and streams.

18,861. You say forced out. What do you mean by forced out?—Exactly the process that you are speaking of; you get a nip where the clay comes on the top of the chalk, and the water runs out at the edge of that nip.

18,862. Why does it run out?—Because it is nipped.

18,863. Why does it not run by your underground river?—Because it is nipped.

18,864. Why do you call it a nip?—Because there is not sufficient space to run down.

18,865. That is the whole of my case—that there is not sufficient space to run by the underground river?—But if you pump at that point, as I said before, you are taking that water, but you will not take anything beyond it—not anything above it.

18,866. But you agree that at any rate, if you pump the water at the edge there, you are increasing the outlet from the general reservoir of the chalk?—Not at all, you are not lowering the level of the chalk at all.

18,867. You do not agree, but that is what I submit to the Commission is the effect of your own answers, at any rate—

18,868. (Mr. Pember.) Would you mind saying what you mean by the word nip?—That the weight of the clay on the top crushes the chalk at the nip and closes the fissures.

18,869. (Lord Robert Cecil.) So that the underground river in the chalk, if it exists, can no longer carry the same amount of water that it carried in the bare chalk. That is what you mean?—That is not necessarily so.

18,870. But that is what you mean?—Very probably it is so.

18,871. That is what you mean by nipped?—That is what I mean—if it is closed together.

18,872. The clay increases in thickness, generally speaking, as you get south-east from the edge of the chalk?—To some extent, yes.

18,873. Except where the two crop out together?—Yes, but it is not all the way along. Mr. R. E. Middleton.

18,874. No, but generally speaking, that is so?—Yes, generally speaking, that is so. 29 Nov. '98

18,875. Therefore, generally speaking, you get a greater weight lower down than that which is at this point?—Yes.

18,876. A further nip therefore lower down—nip is an admirable word—just at the point of outcrop of the chalk?—That is so.

18,877. Therefore continuous constriction of your underground channel under the London clay?—No, that is not necessarily true, because it may widen out.

18,878. How can it widen out if it goes the whole length of the chalk?—Because the chalk may widen out too—and does.

18,879. Widens out in depth?—No, widens out sideways as well as in depth.

18,880. How do you mean, widens out sideways?—The chalk in the Lea Valley is narrower than the chalk lower down towards Purfleet.

18,881. What do you mean by narrower?—That the bed does not extend to so great a distance.

18,882. So great a distance which way?—Not so great a distance at that point as it does near Purfleet.

18,883. A great distance which way, east, west, south, or north?—South-west to north-east.

18,884. Then it extends the whole distance at that point?—No, at least it is not permeable through the whole distance—not the whole way—there is no water coming into it.

18,885. Where does it cease to be permeable?—First of all, we know that it is clearly permeable under London.

18,886. I know, but I am sorry to say you do not seem to follow any question I put to you—I am afraid it is my fault, and I am very stupid. The outcrop of the chalk extends the whole distance along, as you have explained to us?—Perfectly true.

18,887. Then how can it widen under the London clay?—Because the practicable course through the chalk certainly widens at this particular part. It is nipped again by the weight of the clay in London, and there is a narrower passage there than there is at other places.

18,888. I do not understand in the least what you mean, but is it this: that you conceive certain passages through the chalk which are wider or narrower, or what is it?—You can imagine—

18,889. You can imagine anything?—I was going to say, you can imagine that wherever this process, that I am speaking of as nipping, goes on, there might be an island in the river, and that by that means the river is narrowed at that particular place, and it is narrowed by this bed of London clay under London.

18,890. But forgive me, the London clay may extend from close to Ipswich down to Windsor and Staines?—Certainly.

18,891. What do you mean by an island of clay. It is all over the whole thing?—Certainly it is, but not of the same thickness all over.

18,892. I agree it may be nipped, more or less—that I agree to?—Where it is more nipped you may take it as being to all practical intents and purposes an island or a partially submerged island in the stream.

18,893. Yes, but in any case the weight of the London clay in the middle of Essex, and in the middle of this expanse will be, generally speaking, greater than it is at the edge—of the outcrop of the chalk?—That is so.

18,894. Therefore the nipping will be, generally speaking, greater in the middle of this stream than at the outset of the stream?—But you see that we have another outcrop.

18,895. Will you answer me?—Certainly.

18,896. Do you say that that is so?—Yes.

18,897. (Chairman.) You say, "But we have another outcrop." Where?—At Purfleet.

18,898. (Lord Robert Cecil.) I know, but you have got to get to Purfleet?—Certainly

Mr. R. E. Middleton. 18,899. To do that you have to pass under this weight of London clay?—Certainly.

29 Nov. '98 18,900. And in point of fact, where you are able to test it under London there is no such flow of water?—There is a flow to the extent of about 10 million gallons a day there.

18,901. But nothing which will serve your underground stream?—Certainly not.

18,902. Now there is one other point I think I must put to you, but you very likely will not be able to answer me. Have you taken the rest level of the wells down the Lea Valley, both of the New River and East London?—Not this year.

18,903. Do you know that they show a slope, generally speaking, towards London?—Naturally they do.

18,904. Does that mean that the water is flowing under these wells towards London?—Yes, towards London.

18,905. Therefore it is flowing into the London depression?—No.

18,906. Where does it go then—at right angles?—A perfectly straight line of wells will not tell you the true line of flow at all.

18,907. But if you have two perfectly straight lines of wells both showing the same slope of water, does not it follow that the water is going in that direction?—If they were perfectly parallel it would be so, but I think they are not perfectly parallel.

18,908. But they are very nearly parallel, are not they—the New River and East London?—I mean parallel as to level as well as direction.

18,909. Are they not very nearly parallel as to level?—I think not in this district.

18,910. But have you investigated that point?—I have not looked into it this year.

18,911. I do not care about this year, but have you ever investigated it?—I have in years gone by, but at that time there were very few wells in East London at all, and the only test was a very poor one.

18,912. Therefore you do not know whether that is so or not?—I do not know.

18,913. If it were so, do you agree that it would show the underground stream, so far as it exists at all, is flowing down towards London?—Certainly, if it were so.

18,914. You have already admitted to me that it does not flow under London to the sea. Therefore, the whole of that underground stream, if it exists at all, must be represented by the 10 million gallons that is drawn?—No.

18,915. Why not?—Because it is perfectly easy for some of it to get into the Thames.

18,916. How?—In other directions.

18,917. Flowing towards London?—Yes.

18,918. If it is flowing towards London how can it get into the Thames?—Down through the valley of the Lea and from there into the Thames.

18,919. Where is it going to get into the Thames?—There are plenty of places. The Thames is lying in the chalk in a good many places.

18,920. Below London?—Below London; Purfleet, for instance, I have already spoken of.

18,921. In how many places below London does the Thames flow over chalk?—At Erith for one, and at Purfleet for another, and Grays for another.

(*Chairman.*) We have got evidence that the clay is denuded at Lea Bridge, and that the water comes up there through the green sand.

18,922. (*Lord Robert Cecil.*) Purfleet and Grays are close together, and so is Erith?—Erith and Purfleet are close together, but not Grays.

18,923. Grays is not far, is it?—It is some distance off—about four miles.

18,924. It is all in a tiny little space; it is almost due south of Brentwood, is it not?—Yes.

18,925. Anywhere near the valley of the Lea?—No, but that water finds its way down there somehow.

18,926. You say so?—I believe so, at any rate.

18,927. But if you find water flowing down the valley of the Lea towards London, in order to find its way down there, it must turn at a perfect right angle in order to go there—10 or 20 miles down the river towards Purfleet?—There is no reason why it should not turn at right angles to come out at Purfleet, and there is a reason why it should come out at Erith and Purfleet.

18,928. (*Chairman.*) What is the reason for it coming out?—Because there is a great fault which runs down the centre of the river there, and the water can be seen coming up at low water. The colliers come and take fresh water out of the river for drinking purposes in the river there, just below Erith.

18,929. (*Lord Robert Cecil.*) Have you any single fact to put before the Commission to show that that water comes from the Hertford chalk rather than from the Kent chalk?—I am afraid I could not prove it.

18,930. Have you taken any levels of wells to show that there is any flow of water whatever from the Hertford chalk towards London?—I have endeavoured to get them, and so far as I know it is impossible to get a succession of wells which will answer the purpose.

18,931. In other words, you have not done so?—I have not, because I could not get them.

18,932. (*Mr. Mellor.*) On which side of the river does the water come up at low water?—On both sides.

18,933. (*Lord Robert Cecil.*) Both sides, Erith on the south, and Purfleet on the north. You agree that if there were a line of wells showing a slope, for instance, from the Kent chalk towards that chalk the inference would be that the water came from the Kent chalk?—No, I think not, because you have this fault running right through Belvedere.

The witness withdrew.

[Adjourned to Monday next at 12 o'clock.]

THIRTY-NINTH DAY.

Monday, December 5th, 1898.

Guildhall, Westminster, S.W.

PRESENT :

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Honourable JOHN WILLIAM MELLOR, Q.C.,
M.P.
Sir JOHN EDWARD DORINGTON, Bart., M.P.
Sir GEORGE BARCLAY BRUCE, Kt., C.E.

ALFRED DE BOCK PORTER, Esq., C.B.
Major-General ALEXANDER DE COURCY SCOTT, R.E.
ROBERT LEWIS, Esq.

CECIL OWEN, Esq., Secretary.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
Mr. Littler, Q.C., and Mr. Lewis Coward, appeared for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. REGINALD EMPSON MIDDLETON recalled and further examined.

Cross-examined by Mr. BALFOUR BROWNE.

18,934-9. We know, of course, that you are a civil engineer?—Yes.

18,940. Will you tell me the names of any towns that you have supplied with water?—Honiton, a small place called Dauntsey—

18,941. Honiton is not very big?—No, it is not very big, and Dauntsey is even smaller; Rushden—

18,942. (Mr. Mellor.) What do you make the population of Honiton?—Honiton is about 4,000, as far as I remember.

(Mr. Balfour Browne.) Honiton, Dauntsey, Rushden

18,943. (Sir John Dorington.) Is that Dauntsey in Wiltshire?—Yes; then the Three Counties Asylum, near Hitchin.

18,944. (Mr. Balfour Browne.) That will be a population of 1,500, about?—Yes; and at Huntingdon.

18,945. Have you carried out the scheme for Huntingdon?—I did not carry out the scheme for Huntingdon—I altered the original scheme.

18,946. Will you tell us of any large reservoir or reservoirs that you have constructed?—I have not finished the construction of any large reservoirs.

18,947. Can you tell me the total length and capacity of any long conduit that you have constructed?—I am constructing one at present, but I have not constructed any of very great length before.

18,948. The one that you are constructing, I suppose, is connected with the Staines Scheme?—Yes.

18,949. Have you ever constructed a masonry dam, such as that which is to be constructed on the Upper Wye?—I have not.

18,950. Never. Then I take it, without, of course, wanting to say anything invidious, that your experience in these matters cannot be so great as that of Sir Alexander Binnie, Sir Benjamin Baker, and Mr. Deacon?—Not in that particular direction—no.

18,951. Not in that particular line; and I daresay you know they have devoted a very large number of years, especially Sir Alexander Binnie and Mr. Deacon, to the study of this proposal to bring water from Wales?—So I believe.

18,952. Have you visited the ground itself—I take it you have, because you spoke of certain drift being visible there?—The ground of the Welsh reservoirs?

18,953. Of the Welsh Scheme?—Yes, I have done so.

18,954. How long did you spend there?—I have visited it, I think, three different times.

18,955. Have you taken any levels or surveys?—Yes, I have taken levels.

18,956. Of our scheme?—That, of course, it is impossible for me to say.

18,957. No, but remember, although it is impossible for you to say what our scheme is, you have ventured before the Commission to put figures upon it?—Certainly.

18,958. Without knowing what it is?—It is impossible for me to say exactly where your dam will be, because it has not been published.

18,959. Are you aware that, not only have the Welsh valleys been carefully surveyed for the reservoir sites, but that the whole of the line between Wales and London has been levelled and surveyed in a most detailed manner?—I daresay.

18,960. And a large staff of engineers has been employed for that purpose?—I daresay.

18,961. I will be done at once with all these invidious questions, but I want to ask you, have you had much experience in the transfer of waterworks from companies to local authorities?—No, not a large amount.

18,962. I remember you were arbitrator in an East Sussex scheme, was it not?—Mid Sussex.

18,963. With that exception, have you ever acted as arbitrator or umpire?—No, I never have.

18,964. And even then, I think, although you were one of the arbitrators, Sir George Bruce was the umpire?—He was.

18,965. Ultimately, the arbitrators differed, and the decision, I daresay, went to Sir George Bruce?—It did.

18,966. I have done with that matter, and I am glad of it. Now, with regard to the Staines Scheme, I want to ask you something: Mr. Hunter and Mr. Fraser were responsible in the first instance for the design

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Mr. R. E. Middleton. of the Staines Scheme, were they not?—For the inception of the Staines Scheme.

5 Dec. '98 18,967. For the inception?—Yes.

18,968. And Mr. Hunter gave evidence before the Balfour Commission, which is set out in the Appendix to that Report?—That is so.

18,969. Was not the design of the Staines Scheme, as laid before that Royal Commission, to take 300 million gallons per day from the river, and to leave the minimum of 200 million gallons per day flowing over Teddington Weir, if Nature would give it?—As far as the leaving 200 million gallons is concerned, yes; as regards the 300 millions, they went up to 300 millions, but did not go further.

18,970. That is so—that was the limit that they proposed—300 millions?—No, it was not the limit that they proposed; that was all that they took into consideration.

18,971. All that the scheme designed to appropriate?—That is so.

18,972. Is it not the fact that Lord Balfour's Commission did not commit themselves to the sufficiency of the amount of 200 million gallons over Teddington Weir?—They did not say anything about it one way or another, to the best of my knowledge.

18,973. Therefore, they did not commit themselves to that being a sufficient quantity?—No, and they did not say that it was not more than sufficient.

18,974. Were not all the floods exceeding 2,300 million gallons to be rejected?—For a certain number of days, according to that statement, yes.

18,975. That is to say—for a period of fifteen days?—Yes, that is so.

18,976. You have told this Commission that, in your view, any such rejection is not essential?—Yes.

18,977. So that you differ from the scheme as submitted to the Balfour Commission?—I do.

18,978. Do you know that the Royal Commission—I have the paragraph here (page 125), and I daresay it is familiar to you—recommended, in the case of the Thames and Lea, that the first flush of the floods should be rejected?—Yes.

18,979. Is it not the fact that Messrs. Hunter and Fraser designed the works at Staines for a total capacity of 18,000 millions, divided into nine separate reservoirs?—Yes, that is so.

18,980. And that was for a supply of 300 million gallons a day?—Yes.

18,981. Then one more word of description. That water so stored was to be passed down to the Grand Junction, the West Middlesex, and the Southwark and Vauxhall at Hampton, and branch conduits would supply the East London at Hanworth, and the Chelsea and Lambeth at Molesey?—Yes.

18,982. In that scheme of Messrs. Hunter and Fraser, was not the 300 millions gallons a day to include the 130 million gallons a day, which we roughly call the authorised amount of the present London Companies?—That I am not clear about. I do not think that there is anything specific on the subject in their report. If you can show me it, I should be very glad to hear it.

18,983. I will, because I think it is important. On page 477, I find the Report of Messrs. Hunter and Fraser of the Appendix to the Minutes of Evidence laid before the Balfour Commission, which is dated September 13, 1892. It says: "The following table has been prepared upon this basis, the calculations being given at the end of the report. It is assumed that the supply will increase at the same rate per cent. during the next 50 years, but upon a compound ratio; from the present quantity of about 90 million gallons per day to the 300 million gallons per day previously shown to be required from the Thames in 1931, upon Mr. Binnie's estimate. The second column is obtained by adding the estimated water supply required at the different dates, to the 200 million gallons per day, which, it is assumed, should be the minimum flow at Teddington Weir. The third column shows the storage required at the different dates for drought." Now, referring to that table, do you not find that in the 300 million gallons, the 130 millions drawn from the Thames at the present time is included in their calculation?—I do not think it is necessarily, from what you have read to me, although I think it is quite possible that it may have been so.

18,984. It is quite possible that it may have been so?—Yes, I do not know for certain, but I do not think what you have read to me is evidence that it is so.

(*Sir George Bruce.*) It was not expected or provided that more than 300 millions should be supplied from the Thames in any one day.

(*Mr. Balfour Browne.*) That is so.

(*Witness.*) That is so.

18,985. (*Sir George Bruce.*) Therefore, they must have included it, because "out of the Thames" means from the Thames and the Staines reservoirs?—Certainly, Sir George.

18,986. (*Mr. Balfour Browne.*) Therefore, we are agreed that it was included?—It must have been included if the minimum amount at Teddington was to be 200 million gallons; certainly, I think it must have been included.

18,987. And that was the part that I read where it said the minimum was to be 200 million gallons?—Yes, I think it must have been included.

18,988. Then you practically agree with what the Royal Commission said at paragraph 182 of their Report, that 300 millions can be supplied from the Thames by the construction of storage reservoirs at no great distance above the intakes of the companies, without taking in any objectionable part of the flood water?—Yes.

18,989. Further, in paragraph 176, they say—and I daresay you agree with this too—"For the water that flows down to the intakes must be subjected to certain important processes before it is brought into a suitable condition for delivery and consumption; these processes consist of subsidence and filtration?"—Yes.

18,990. I take it that you agree that all the water dealt with in these reservoirs has to be subjected to these processes?—It will be subjected to these processes, certainly.

18,991. And do you draw no distinction between the Staines water and the water taken at the intakes of the companies for that purpose?—No, I do not see that there is any.

18,992. (*Major-General Scott.*) It will not be subjected to those processes mentioned collectively—that is to say, all the processes will not be applied to all the water. You take a large portion, I may remind you, of the water supply from the river directly?—Certainly, directly.

18,993. Therefore, it will not be subjected to the process of subsidence, will it?—No, not entirely; certainly not.

18,994. (*Mr. Mellor.*) You say not entirely; what do you mean by it, I do not quite follow it?—Only as regards such water as is taken out of the reservoirs. The water as taken direct from the river will only be subjected to filtration or to such subsidence as may take place in the reservoirs of the companies themselves.

18,995. (*Major-General Scott.*) No water will be taken out of the reservoirs if it can be got out of the river, will it?—No water will be taken so long as it can be got out of the river.

18,996. (*Mr. Balfour Browne.*) Do I understand that the water once getting into the reservoirs the subsidence will take place there, and will not have to be repeated elsewhere, is that it?—And will not have to be repeated elsewhere?—no, need not be.

18,997. But, still, the water that goes in, before it reaches the consumer is subjected to both subsidence and filtration?—No, not necessarily.

18,998. Do you mean to say that you would take your water direct from the river and subject it to only one of these processes?—Certainly.

18,999. Filtration alone?—Filtration only.

19,000. And supply it direct after filtration to the consumer?—Certainly.

19,001. Therefore, you do not agree with that paragraph that I have just read, where the processes that the water has to go through consist of subsidence and filtration?—Subsidence is not necessary all the year round, and it would not take place when the water was delivered straight from the river on to the filter beds.

19,002. Now, I want to ask you some questions as to the quantity required for future supply. A great deal of course, turns upon that in your calculation. Is it a fact that all your tables proceed upon the supposition that 35 gallons per head per day will be sufficient?—Yes.

19,003. Are you aware that in the Balfour Commission Report, the idea was that the average per head in 1931 would be only 29·73 gallons per head per day?—Really, I do not think so; I never understood it so.

19,004. If you look in the 62nd paragraph (page 24) of the Commission's Report, I think you will find that that is so. It is the bottom of the page: "Estimated Daily Supply per Head in 1931"—These are the companies' estimates—nothing in the world to do with the Commission's.

(Mr. Balfour Browne.) I did not say it was. I am going to show, if I can, that the companies were wrong, but that is what the Commission apparently took from the companies and what they estimated would be required in 1931.

(Mr. Pope.) The companies estimated?

(Mr. Balfour Browne.) The companies.

(Mr. Pember.) Of course, they were wrong.

(Mr. Pope.) The Commission gave 35 gallons per head.

19,005. (Mr. Balfour Browne.) They took 35. I want to show that both the Commission in taking 35, and Mr. Middleton in taking 35, are taking too small a figure. (To the witness.) The companies at that particular date took a much smaller figure even than you take now, namely, 29·73; are you aware that since that report was published, namely, when the evidence was given in 1891, the Chelsea have increased their consumption per head by 9·6 gallons, the Kent by 1·51 gallons, the Lambeth by 3·18 gallons, the New River by 0·93 gallons, the Southwark and Vauxhall by 11·29 gallons, and the West Middlesex by 5·61 gallons?—It is quite possible, but I have not the figures before me.

19,006. You do not know?—I have, no doubt, it is perfectly true.

(Chairman.) What period do those figures apply to?

(Mr. Balfour Browne.) From 1891 to 1897. That is the increase of the then consumption of each of those companies per day. (To the witness.) Now, was not the average of the whole Metropolis in the year 1897, 35·42 gallons per head—

(Mr. Mellor.) That is the actual consumption, is it?

(Mr. Balfour Browne.) Yes.

(Witness.) I daresay it was.

(Sir George Bruce.) Plus waste.

(Mr. Balfour Browne.) Plus waste, of course, and we will see whether waste can be prevented.

(Mr. Pember.) Minus waste.

(Mr. Pope.) No, it is actual consumption, plus waste.

19,007. (Mr. Balfour Browne.) It is including waste. (To the witness.) When we are dealing with the consumption per head we always include the figure of waste, do we not?—We are obliged to.

19,008. So we are right. What is the good of assuming that, in 1931, the consumption will only be 35 gallons per head when we find that in 1897 it was half a gallon over that mark, and increasing, as I have shown you, in all those different companies?—I think, as Lord Balfour's Commission said at the time, that if they erred in using the figure of 35, they erred on the side of liberality, and, I think, that it errs still on the side of liberality.

19,009. What is the good of liberality when we find the actual consumption is more than what they called liberality?—I presume it is more than it ought to be, then.

19,010. That is quite possible, but you know, as a fact, that in 1897, they exceeded the total that the Commission calculated would be used in 1931?—That may be so.

19,011. Is the tendency to increase the amount per head?—I should say the tendency was to increase the amount per head as regards the use of water.

19,012. That is what I mean, as regards the use of water?—"The use," I said.

19,013. If my figures are accurate that I have given you, that Chelsea has in six years increased its consumption by 9·6, and the Southwark by 11·29, that tendency is shown to be a very rapid increase indeed?—Well, I do not think that that is a necessary proof, because the years have been ones where the consumption of water would be likely to be high: and also it may be simply that there has been a very large amount of waste in the particular companies concerned.

19,014. Do you know anything of the waste in these two companies?—With regard to the Chelsea, no; with regard to the Southwark and Vauxhall, I think it is a matter of knowledge that they have had a very leaky main, and that they have had great trouble with it, and that that has had a great deal to do with it.

19,015. Do you know anything about the quantity of water that has been lost?—I know nothing of that.

19,016. Of course, a leaky main is a disadvantage to the company, but it is also a disadvantage to the consumer, because the consumer has to pay for the pumping of all the water that leaks?—I do not think the consumer has to pay anything towards that.

19,017. Do you not?—No; the shareholders have to pay for it.

19,018. Forgive me, do you not know that whenever the shareholders get their maximum dividends the ratepayers are entitled to a reduction in the price of water?—That is so.

19,019. And any pumping of water to loss must postpone the time when the ratepayers will get a reduction in the price of water?—Perfectly true; but that is exceedingly problematical.

19,020. Now tell me, would it not, having regard to your experience in 1897, be far safer to take what Sir Alexander Binnie does take as the probable consumption, namely, 40 gallons per head?—No, I think 35 is ample.

19,021. Do you think so? Do you know that in Glasgow to-day, where nobody accuses them of waste?—Excuse me.

(Mr. Pope.) Excuse me.

(Mr. Pember.) Oh, oh!

(Witness.) They do accuse them of waste, and of the greatest waste.

19,022. Of waste from the mains?—Not from the mains.

19,023. (Mr. Pember.) Of the wasteful use of water?—Yes, the wasteful use of water.

19,024. (Mr. Balfour Browne.) Forgive me, what are they using, do you know?—I do not know; the last I heard was 50 gallons per head.

19,025. And, as you have said, the tendency is greatly to increase the use of water for domestic purposes. Now, as to the total quantities required in 1891. According to Lord Balfour's Commission, there were 171,163,385 gallons supplied to London. Do you remember that figure?—No, I do not remember that particular figure.

19,026. Will you take it from me that it is accurate?—Yes, I am quite willing to take it from you.

19,027. Then, in 1897, the consumption was 202,102,554 gallons—

(Sir George Bruce.) What are you reading from?

(Mr. Balfour Browne.) This is taken from the Examiner's Report. I think I am right in saying that.

(Mr. Pember.) For one day.

(Mr. Pope.) You are reading figures that have been calculated from other figures.

(Mr. Balfour Browne.) From the Examiner's Report?

(Mr. Pope.) Not from any statement.

(Mr. Balfour Browne.) It has not been put in, so far.

(Chairman.) You first read a figure from paragraph 32 of the Balfour Commission.

(Mr. Balfour Browne.) I read from the Balfour Commission. A figure of 171 millions odd.

(Sir George Bruce.) Where do you find that?

(Chairman.) That is on page 15 paragraph 32 of the Balfour Report.

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Mr. R. E. Middleton. 19,028. (*Mr. Balfour Browne.*) Thank you, my Lord. It is given there in the first column, "Net supply per day." (*To Witness.*)—Now, in 1897, I suggest that had gone up—I will only read the first three figures, because it will save trouble—from 171 millions to 202 millions?—But may I call attention to the fact that the 171 millions is a correction made by myself, and that the return of the companies was 182,933,897.

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19,029. Is your correction correct?—That was an allowance made for slip and short stroke, which I believe to be perfectly correct.

19,030. They had not made allowance, and, therefore, you made it?—Some of them had made the allowance, and others had not.

19,031. (*Mr. Mellor.*) In respect of what, Mr. Middleton? I did not catch it?—In respect of slip and short stroke in the pumps.

19,032. (*Mr. Balfour Browne.*) It was calculated from the number of strokes. I suppose they had not allowed for that?—They had in some cases, but not in others.

19,033. I find it has gone up from 171 millions to 202 millions, that is to say, an increase of 30,939,159 gallons per day.

(*Mr. Pope.*) Would not the 202 millions be subject to the same correction as the 171 millions?

(*Mr. Balfour Browne.*) I do not know—I am not sure.

(*Mr. Pope.*) That might make a difference.

(*Mr. Balfour Browne.*) It might, possibly—I do not know. I am informed that ours is corrected for short stroke and slip, in the same way as Mr. Middleton did the 182 millions.

(*Mr. Pope.*) So, according to your calculation, it was 202 millions upon the corrected calculation?

(*Mr. Balfour Browne.*) Yes, upon the same basis. Of course, it would only be fair to put it on exactly the same basis, otherwise we ought to have taken 182 millions.

(*Mr. Pope.*) Quite so.

(*Witness.*) It is not exactly on the same basis; it is on a basis which has been arranged with General Scott since that time; it is not on the same basis.

19,034. (*Mr. Balfour Browne.*) It will not make much difference, will it?—No, I do not think it would.

19,035. It does make an allowance for slip and short stroke?—That is so.

19,036. Comparing those two figures, that shows an increase in six years of close upon 31 million gallons?—Yes.

19,037. Now, it may be too much to say that the rate would be maintained; but if that rate were maintained in 1931, the consumption would be 518 million gallons a day as against 415 million gallons, which was the calculation of the Balfour Commission?—That may be perfectly true.

(*Mr. Pope.*) Would you repeat your question?

(*Mr. Balfour Browne.*) If that rate of increase was maintained until 1931 in the same way as it was maintained in those six years, the total consumption would be 518·2 million gallons per day in place of the 415 million gallons per day of the Balfour Commission.

(*Mr. Pope.*) I follow; it is a calculation, of course?

19,038. (*Mr. Balfour Browne.*) That, of course, is mere arithmetic, Mr. Middleton, but I have no doubt you will accept it?—I will only accept it as far as to say that it is accurate as far as the arithmetic goes.

19,039. Certainly?—But that you should not base any calculations on one particular year.

19,040. I have not based it on one particular year; I have based it on six?—No, you base it on the difference between the first and the last years.

19,041. Yes, that is so?—That is not, of course, a calculation which is necessarily an accurate one at all. I do not know what the year before was, or the year before that. There are very frequently very considerable jumps in the supply for a particular year, and if they were followed out they would make very large increases which are not carried out by facts.

19,042. (*Chairman.*) May I interpose one question? Are those years from 1891 to 1897 the years of the introduction of constant supply?—Yes, several of them are.

(*Mr. Mellor.*) Surely constant supply was not introduced till 1897, was it?

(*Sir George Bruce.*) Yes.

(*Witness.*) Oh, dear me, yes.

19,043. (*Mr. Mellor.*) In London?—By several of the companies.

(*Mr. Balfour Browne.*) It was extended in those years, but it was not introduced everywhere.

(*Mr. Mellor.*) It was not completely finished?

(*Witness.*) It is not completely finished yet.

19,044. (*Chairman.*) Would the introduction of constant supply affect the rate per head of water supply?—I should think so, undoubtedly.

(*Mr. Balfour Browne.*) At any rate, you say it is not fair to take a year; that table which gave 171 million gallons was the starting point of the calculation as to 1931 of the Balfour Commission.

(*Major-General Scott.*) Excuse me for a moment; you are quoting a figure repeatedly of 171 million gallons.

(*Mr. Balfour Browne.*) Yes.

(*Major-General Scott.*) Does that refer to 1891?

(*Mr. Balfour Browne.*) Yes, I take it to be so.

(*Major-General Scott.*) I have a figure here for 1891 of 175 millions.

(*Mr. Balfour Browne.*) That probably was the non-corrected figure. If you look at the Report of the Royal Commission on page 15, you will find I am told, sir, although I cannot lay my hand on it at the instant, that in the whole of these paragraphs they are dealing with the year 1891—I do not see the date at the moment.

(*Sir George Bruce.*) You will find it on page 14 under the head of "Water now Supplied" it speaks there of the water as supplied by the eight Metropolitan Companies in 1891.

(*Mr. Balfour Browne.*) Thank you sir, I see that is so.

(*Sir George Bruce.*) I do not know whether that applies to the whole of both pages.

(*Mr. Balfour Browne.*) I think so. (*To the witness.*) On the following page Mr. Middleton explains that the Water Companies return brought out a higher figure, but on correction be made it 171,163,385.

(*The Witness.*) The figures do not appear to apply to the same thing. These figures in the table on page 14 and the ones in the table on page 15 do not agree. The New River in the table on page 14 is 32,975,292.

19,045. (*Mr. Balfour Browne.*) I do not know whether they agree. If you look at the end of that table to which Sir George Bruce has called my attention, it brings out the 182,456,000 which you corrected?—No, I corrected it from 182,933,897. So that the figures are not the same.

19,046. They are very close up?—They are close, but they are not the same, so that apparently it is not exactly the same datum.

19,047. (*Chairman.*) I thought you had corrected it to 171 millions?—Yes, I corrected it to 171 millions for slip and short stroke, but I see that the two figures on the two pages do not refer to exactly the same thing.

19,048. (*Mr. Balfour Browne.*) They will not be exactly the same, because, of course, the one on page 14 is the Companies' return, and the Companies' return was without the allowance for short stroke?—And so was the Companies' return of 182,933,897.

(*Mr. Balfour Browne.*) Then they have returned two separate figures, the one about 500,000 more than the other.

19,049. (*Major-General Scott.*) Did you take a general percentage off for slip and short stroke?—No. In the Appendix to the Report you will find a statement of how it is done. There was a different allowance made for every different shape of valve, and also for every different sort of engine, and for the age of the engine, the time the pumps had been working, the time the valves had been in, and so on.

19,050. (*Mr. Balfour Browne.*) I quite understand it is a difficult calculation, but the calculation was made and the result was that the amount supplied in the year 1891 was 171 million gallons?—Yes, that is so.

19,051. Of course, you will check this otherwise, but we have compared that with what was supplied in

1897, and that would account for 100 million gallons a day more consumption in 1931 than Lord Balfour's Commission calculated on. Now just let me ask you a question on that, to corroborate that from another point of view; the Southwark and Vauxhall Company stated before Lord Balfour's Commission—this is upon the Table in the 62nd paragraph—that their average daily consumption would in 1931 be 30,386,425 gallons. Do you follow that?—I do.

19,052. Before Sir Joseph Pease's Committee, which sat in 1896, when they came and asked for further water supply they said that in 1931 it would be, not 30 millions, but 63,362,840; do you remember that?—I do not remember the figures, but I daresay you are perfectly right about it.

19,053. There, on that one company alone, Lord Balfour's Commission proceeded upon half the quantity of water which they five years afterwards said would be required?—I do not think that Lord Balfour's Commission proceeded upon that basis at all.

19,054. Of course, I cannot tell what they proceeded upon, but they stated that that would be the consumption?—No, the Companies stated these things.

19,055. The Companies stated it?—Yes, but clearly Lord Balfour's Commission did not accept these figures of the Companies.

19,056. I do not know what they accepted, of course, but that was the Companies' statement, that they would require 30 millions, and five years afterwards, when they wanted more water from the Thames, they stated that they would require at that very same date more than double the quantity of water, namely, 63 millions.

(Mr. Pope.) Not "they."

(Mr. Pember.) You keep talking of "they."

(Mr. Pope.) One particular Company came forward.

(Mr. Balfour Browne.) I beg your pardon. "They" means the Southwark and Vauxhall, and I am speaking simply of the Southwark and Vauxhall.

(Mr. Pope.) I beg your pardon, you say the word "Companies" at one time, and then you said "they."

(Mr. Balfour Browne.) I first referred to the whole of the Companies, and now I am dealing with this Company, and I say that the Southwark and Vauxhall Company stated—

(Mr. Mellor.) In what year, Mr. Balfour Browne?

(Mr. Balfour Browne.) First, to the Balfour Commission in 1891, that when 1931 came, their consumption would be 30,386,000; then in 1896, before Sir Joseph Pease's Committee, they stated that it would not be 30 millions, but 63 millions. That was the same Company making the two statements.

(Mr. Pope.) You cross-examined, and the Bill was rejected.

(Mr. Balfour Browne.) What can that have to do with it?

(Mr. Pope.) I do not know what it would have to do with that.

(Mr. Balfour Browne.) Then, if you do not know, I do not think it can be relevant. I am only showing that the Balfour Commission and the Companies proceeded upon too small an estimate of their requirements in 1931, and their own admission shows it.

(Sir George Bruce.) Whose admission?

(Mr. Balfour Browne.) The Southwark and Vauxhall Company's.

(Sir George Bruce.) Not the Balfour Commission?

(Mr. Balfour Browne.) No, not the Balfour Commission.

(Mr. Pope.) I quite concede you are showing that Southwark and Vauxhall made a statement in 1897 which was inconsistent with a statement they made before the Balfour Commission.

(Mr. Balfour Browne.) That is all.

(Mr. Pope.) But you are not entitled to say that the Balfour Commission paid any heed to their statement or not.

19,057. (Mr. Balfour Browne.) Very likely not; I will not assume any such ridiculous hypothesis. (To the witness.) Now take another company, the Lambeth Company; did they say that their requirements in 1931 (it is in the same paragraph) would be 28,411,025?—Yes.

19,058. Their average daily supply in September last, which is not 1931, but 1898, was 31,891,317, according to the Water Examiner's Report?—Yes, but I must at once say that the supply of one month has got nothing whatever to do with it.

19,059. We will deal with the one month afterwards? No; we want the average figure for the year, and not the average figure for that month. This is the average figure given here (pointing to table.)

19,060. Follow me; then in that month, apparently, they were supplying more than 31 years before the date that they said they would require, 28,411,025 gallons?—How much more would they have been supplying during the month of September in the year 1931 under these figures that they give here?

19,061. I am sure I cannot say; if you can tell us, by all means do?—Probably something like 20 per cent. more.

19,062. I have dealt with the Southwark and the Lambeth. Now take the New River; the New River Company said before the Balfour Commission that in 1931 they would want 47,250,000 gallons?—Yes.

19,063. Is it not the fact that before Sir Joseph Pease's Committee in 1896 they said that in the year 1915, or sixteen years earlier, they would require 77,920,000?—That is so, I believe.

19,064. Therefore, so far as these three companies are concerned—I will not say that it is the Commission that has anything to do with it—they under-estimated at the time of the Royal Commission what they would require in 1931—

(Mr. Pember.) They may have over-estimated on the other occasion.

(Witness.) Yes, they may have over-estimated on the other occasion.

(Sir George Bruce.) In 1931.

(Mr. Balfour Browne.) Possibly, sir, but the over-estimate came five years later.

(Mr. Pember.) Quite so.

(Mr. Balfour Browne.) And it came when they were seeking to get powers from Parliament for a further supply of water.

(Mr. Pember.) That is what seems to me to throw suspicion on it.

(Mr. Balfour Browne.) I hope not. I daresay they had an equally nefarious motive when they were before the Balfour Commission.

(Sir George Bruce.) There they gave actual facts.

(Mr. Freeman.) No.

(Mr. Balfour Browne.) No, sir, with great respect; the 1931 figure was an estimate.

(Sir George Bruce.) Quite so, I beg your pardon.

(Mr. Balfour Browne.) It was an estimate in both cases.

(Sir George Bruce.) In that table it was.

(Mr. Balfour Browne.) In the case when they were before the Balfour Commission they wanted to show that their present reservoirs would go to 1931, but when they came before Sir Joseph Pease's Committee they wanted to show that they would not.

(Mr. Pope.) They wanted to show immediate urgency.

(Mr. Mellor.) I suppose those estimates are made upon the reports of the engineers of the different companies.

(Witness.) Certainly.

(Mr. Balfour Browne.) Certainly, sir, and the engineers proved, according to their own satisfaction, that those amounts would be required.

(Witness.) If you will excuse me one moment; to begin with, the Lambeth stated that they were going to reduce their supply to 25 gallons per head, and we are now taking 35 gallons per head. You have taken three companies with the very lowest supply—28½ for the New River, 25 for the Lambeth and 25 for the Southwark and Vauxhall. If those were raised to 35 gallons per head, the difference would be very considerably marked.

19,065. (Mr. Balfour Browne.) I have not only done that, but if you will forgive me, you will remember I compared the 171 millions, which was the total of all the companies?—Yes.

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Mr. R. E. Middleton. 19,066. With the 202 millions, which is the total of all the companies?—Yes.

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19,067. And that showed that, if it went on in the same ratio it would bring out 518 millions as against 415 millions?—Which was, no doubt, exactly as true as any other figures which are based on a single year.

19,068. All those figures, are they not, are based upon the average daily supply?—These are based on the average daily supplies.

19,069. But when you, I think, gave evidence before Sir Joseph Pease's Committee in 1896, you made a point that the question should not be judged by average daily supplies, but by the month of maximum supply?—In the absence of reservoirs the maximum daily supply must be taken into consideration, undoubtedly.

19,070. And you put in a table, I think, showing that in the case of the West Middlesex it was 15·4, and in the case of the Grand Junction 16 per cent. above the average?—Yes.

19,071. So that all my figures that I have been giving, being taken upon the average daily supply, would be too small if I took it upon the maximum monthly supply?—No, they are perfectly right, I daresay, on the average supply, but during the maximum month you must give more, and during the minimum month, of course, you supply less, and the average of the year is the average between the two.

19,072. But the average of the year is not what you calculated upon?—I calculated upon both, if I remember right—both on the average of the year and on the maximum.

19,073. I understood you to say that the average of the year was no guide, and that the month of maximum supply was the guide as to what was required?—I do not think I said that. I said that the maximum month must be taken into consideration, and I say so still. So long as storage is not resorted to, the maximum month must be taken into consideration.

19,074. Do you remember Mr. Francis stated before the same Committee that the maximum month should be taken at 25 per cent. above the average?—I believe he did say so.

19,075. That was the New River; if 25 per cent. above the average was to be taken, all the figures I have been suggesting to you would be increased, would they not?—They would be increased for the maximum, but not for the average.

19,076. Now, I also find in the Examiner's Report for 1890-1, when the whole of the districts are supplied on the constant system, that the supply during such periods—that is, the periods of maximum supply—will probably not be less than 25 per cent. in excess of the average; do you agree with that?—No; the very highest that I have found in excess of the average is 21·11 per cent. during one month.

19,077. (*Chairman.*) Resulting from constant supply?—No, not resulting from constant supply.

19,078. That is the question?—Resulting from constant supply. I have no reason to think that it will be appreciably larger than that.

19,079. (*Mr. De Bock Porter.*) The constant supply has raised the amount to be delivered, has it not?—It has so, but I think that it is from another cause, not from that cause—not from the direct question of constant supply, but from the fact that it has been necessary to take off the inspectors, and so on, to look after the constant supply, and to get the fittings altered and prepared for constant supply, and they have not been able to look after the question of waste so thoroughly as they were doing before.

19,080. (*Mr. Balfour Browne.*) Would you mind looking at a table which was put in by Sir Alexander Binnie at Question 2,233, which is worked out upon the method you have suggested, I think, namely, the daily average quantity of water per month delivered from the Thames by the Metropolitan companies during the years 1896 and 1897, and the percentage of daily averages supply for the year; this is, of course, compiled from the Water Examiner's monthly returns. Have you looked at that table before?—I have no doubt I have, but I do not remember it at the present moment.

19,081. Is that substantially correct? What it does is, to show what was the amount in January, February, and so on, for 1896, and then the percentage of daily average supply for the year in the second column;

then it does the same for 1897; and in the fourth column it puts the two together, and gives the percentage again. Does that not show that, even taking 1896 in the third column, in July it was 119·2 per cent., in July of the next year 115·2 per cent., and that the average of those two is 117·2 per cent.?—That is so.

19,082. Then the last column of all shows how much of the 300 million gallons per day would be taken in each of those months upon those figures of the Water Examiner?—Yes, that is perfectly true.

19,083. I see that, for instance, January works out at 93·4, while July, upon the average of the two years, works out at 117·2?—Yes.

19,084. And in that particular month there would have been 351·6 million gallons per day required?—Yes.

(*Chairman.*) On a supply of 300 millions?

(*Mr. Balfour Browne.*) Yes, my Lord, on a supply of 300 millions.

(*Witness.*) On an average supply of 300 millions.

(*Mr. Pember.*) That would be the average supply of 300 millions, and the other would be a maximum.

(*Chairman.*) Yes.

(*Mr. Pember.*) Of course, you would have to draw on your reservoirs for that.

19,085. (*Mr. Balfour Browne.*) If that is the right way to calculate it, what is the good of your going upon a percentage of average supply of the companies as far back as 1883, which you do in your tables?—I have not gone back on a percentage supply of the companies, I have gone on the percentage of monthly averages, which is simply exactly the same thing as Sir Alexander Binnie has given here.

19,086. But you have gone back and started with the year, not 1896, as Sir Alexander Binnie does, but 1883?—What does it matter whether you go back 100 years? It is the same thing; it is a mere percentage.

19,087. A mere percentage?—Yes, bringing it up to the latest years does not bring it any nearer.

19,088. (*Mr. Mellor.*) Surely it can hardly be so, because in ancient times, if you go back 100 years, people used very little water indeed?—It would be the percentage of what the people did use, which would only be the same thing.

(*Mr. Pember.*) It is not the total amount.

(*Witness.*) As a matter of fact there are worse years in the earlier years than there are in the later ones, so that in 1885 in August was 120·42 instead of being, as in 1896, 119·57.

19,089. (*Chairman.*) What table are you now referring to?—My own Table 1, which was handed in at Question 17,731.

19,090. (*Mr. Balfour Browne.*) What I am wanting to get at is what you have to provide for; now, in a bad year, what you have to provide for is the maximum supply?—Certainly.

19,091. And, therefore, we test it in that way?—Certainly.

19,092. As a fact, in your table you show that in 1885 it was 118·44; in 1887, 121·11; and in 1896, 119·57?—That is so.

19,093. And that is the amount you have got to provide for?—That is the amount you have got to provide for in a year like that particular year.

19,094. Therefore, Sir Alexander Binnie does not exaggerate it when he says, taking it at 117, which is a lower figure than any of those three you have given, you would require in that particular month to provide 351·6 millions, or a supply of 300?—He does not exaggerate it if he takes the particular year of supply; he does exaggerate if he compares it with a year like 1893.

19,095. Remember he is not taking the particular year of supply but he is taking the average of two years?—Well, two years of supply, and applying it to 1893, which was not in accordance with the facts.

(*Chairman.*) Those two years, as it happens, being higher; at least 1896 was higher than any other year since 1893.

(*Mr. Balfour Browne.*) 1896, of course, is the highest.

(*Witness.*) Excepting—

(Chairman.) 1897 is higher than all the years except 1893.

(Mr. Mellor.) 1883 is higher, is it not?

(Mr. Balfour Browne.) That is the latest experience we have of the London water supply.

(Witness.) As I have pointed out, the latest experience has got nothing in the world to do with it. You may go back as many years as you like and it will be just as applicable in the back years as it is in the nearest years. The latest experience has got nothing to do with it.

19,096. Again, another table of Sir Alexander Binnie's—it was put in at Question 1,264—shows that between 1867 and 1891 there was an increase in the total supply of water of 73.59 per cent. P—That introduces, amongst other things, the great frost.

19,097-8. Possibly, but it is from 1867 to 1891, so it is a very long period, and, therefore, you may have a great frost in any other 20 years, I suppose; that works out at 2.32 per cent. per annum. Now take 1891 to 1896, the increase was 15.67 per cent. or 2.95 per cent. per annum. From 1867 to 1896 it works out at 100.8 per cent. or per annum 2.43 per cent. Now if you take the lowest of all those percentages, namely 2.32 per annum, that is between 1867 and 1891, and take the year 1896 when the supply was at the rate of 198 millions a day, is it not the fact that the requirements would be, in 1931, 441,858,000 gallons per day, as against the 415 millions of the Balfour Commission?—I daresay it is perfectly true, but then the figure of 1896 is not a proper one to take. 1896 was immediately after and includes the effect of the great frost, and the quantity used on that occasion was far too high.

19,099. If you look at the figures you will see I have taken it from 1867 to 1891?—The amount was far too large. I understood you took it from 98 to 171 and then from 171 to 197, am I right?

19,100. I took the years from 1867 to 1891 and they gave me a percentage of 2.32 per annum?—Certainly.

19,101. Now that period, of course, did not include the great frost?—No, but it included a very rapid increase of population.

19,102. Then I have to put that percentage on increase upon some figure?—Yes.

19,103. And I put it upon the total consumption of the year 1896, which was 198 million gallons per day.

(Mr. Pope.) That, he says, is an abnormal consumption.

19,104. (Mr. Balfour Browne.) In that case you would require in 1931, 441,856,000 gallons per day?—Yes, but I should prefer to use the figures introduced by Lord Balfour's Commission which were well considered at the time and which I think are quite sufficient.

19,105. I see, you always adopt the Report of Lord Balfour's Commission when he agrees with you, but you reject the Report in several particulars. In the first place, you say you take in the floods, and he said you were to exclude them—that is just one illustration, and I am coming to another immediately. First, I want to ask you one or two questions about the increase of the companies' capital. The water companies since 1891 and up to 1897 have been granted further powers to the extent of 5,420,000l.

(Major-General Scott.) 1897 inclusive.

19,106. (Mr. Balfour Browne.) Yes, sir; I am going to add to that immediately what was done in 1898; then in the last session of Parliament there were two Bills, one passed for the Southwark and Vauxhall, which authorised 650,000l. and the enlargement of the Staines Reservoir, of which you know, of course, 250,000l., making a total authorised capital since 1891 of 6,320,000l. P—Yes.

19,107. In 1891 the auditor found that the amount that had been expended upon capital account by the water companies was 15,383,741l., therefore, since 1891 there has been an increase of 6,320,000l. on that, or 41 per cent. increase in capital powers?—Yes.

19,108. You can tell me this, of that amount so granted—of the 6,320,000l.—am I right in supposing that 1,250,000l. given to the Staines and 650,000l. to the Southwark and Vauxhall would be used in increasing the water supply, in fact, bringing it up from 130 million to 185½ million gallons?—Yes.

19,109. That is right; but beyond that the 4,500,000l. was not to be expended in increasing the water supply at all, but merely in making the water supply more efficient?—I presume that it was not in increasing the water supply, but in increasing the works for supplying the water to a large extent.

19,110. Quite so, but no more water would be got by the expenditure of that 4,500,000l. P—Yes, a good deal more water would be delivered by it, though.

19,111. How do you mean—if they do not get it they cannot deliver it?—No, but they were not taking their full quantity at the time, and are not taking their full quantity now.

19,112. Follow me; in 1891 they were authorised to take 130 million gallons?—Yes, they were authorised, but they were not taking it.

19,113. I know that; now they are authorised—I use the word just in the sense we have been using it here hitherto, although I do not quite agree with it—they are authorised to take 185½ million gallons, therefore, the increase is the 20½ million gallons to the one company and the 35 to the other; is not that so?—To the three companies. Yes.

19,114. Quite right, to the three companies. Therefore, I take it that that 4½ millions is not for getting more water, but for rendering the existing supply more efficient.

(Mr. Pember.) It is for getting more water.

(Witness.) It is not entirely for rendering it more efficient; it is for getting more water.

(Mr. Pember.) Of course it is.

(Witness.) It is for delivering more water, although it is not for obtaining powers for more water.

19,115. (Mr. Balfour Browne.) Do you mean to say that without that expenditure they would not have got more water?—Without that expenditure they could not have delivered up to their full capacity. Getting and delivery are two different things.

(Mr. Pember.) Surely increased storage must mean increase in the utilisation of the water.

(Sir George Bruce.) You mean in very dry weather.

(Witness.) No, Sir George. In a great many cases they had not the mains for distributing, and they had not the pumping machinery for distributing.

(Mr. Pember.) They had not the reservoirs.

(Witness.) They had not the reservoir capacity for distributing, possibly.

19,116. (Mr. Balfour Browne.) Therefore, if that is so, then their works were inefficient, and by this expenditure they become efficient?—No, no, the works are perfectly efficient for the quantity they were called upon to supply at the particular time.

(Mr. Pember.) That is right.

(Witness.) They have had to increase the works as the demands upon them increased.

(Mr. Pember.) That is so.

19,117. (Mr. Balfour Browne.) Let us see what they themselves said before the Balfour Commission; they said that their works were in efficient condition, and with slight additions were able to continue the supply up to 1931. Do you call 4½ millions a slight addition to 15 millions?—They have, as I think is well known, increased their storage capacity largely, in consideration of what Lord Balfour's Commission said on the subject of storage. There has been a large amount expended in the sinking of wells, which is an increase of supply, and also in storage reservoirs which were required for actual increase of supply in other directions.

19,118. We will come to wells and other things afterwards; is it not a fact that every one of the companies, except the Kent, have been in Parliament applying for further powers within the last three sessions?—Yes, I think you are right.

19,119. Is it not the fact, as this Commission knows, because they have been told, that the West Middlesex Company and the East London Company are both making applications for additional works and money powers in the next session?—Certainly.

(Mr. Pember.) You dropped in the word "slight." Mr. Balfour Browne, and I do not think I ought to let it pass. It is perfectly true that the West Middlesex.

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Mr. R. E. Middleton. said, for instance, that "all the works hereinbefore described are in thoroughly efficient and good condition, and capable of meeting all demands for the present and the future by extension and improvements from time to time." I do not think there is the word "slight."

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(Mr. Balfour Browne.) Look at the Royal Commission Report.

(Mr. Pember.) That is our own statement that I have just read to you. You will see at a glance, my Lord, I am quite sure that the additional storage that has been put in enables us to utilise our present power of taking water and thereby extending our supply.

(Mr. Balfour Browne.) Forgive me, if you will look at the Report of the Commission you will see that upon that table, upon page 24, they give the estimated population in each of the companies' districts, the estimated daily supply per head, the supply required per day, and the supply available per day, and you will see that the whole difference between the two is 253 million gallons in the first and 294 million gallons in the second column, which is after all a very slight increase.

(Mr. Pember.) Yes, but Mr. Balfour Browne, forgive me. I did not mean to carry it to such a point as that. You said the companies said that they, with slight additions, would be able to do this, that, and the other. Now you are referring, not to what the companies said, but to what the Royal Commission said, and there you have to draw an inference of your own before you can put in the word "slight." But here I give you one company which distinctly never used the word "slight" at all. We know that the improvements and additions have been very considerable, and must be, to enable us to utilise our full powers of taking water from the Thames as our population increases, and that is what I call increasing the supply.

(Mr. Balfour Browne.) This does not enable you to take more water—

(Mr. Pope.) No; it was the question of your justification of the use of the word "slight," that is all.

(Mr. Pember.) And saying that the companies used the word.

(Mr. Balfour Browne.) I said that the companies said the amount required was so much, and that the supply available was so much.

(Witness.) Will you allow me to say a word on that subject?

(Mr. Balfour Browne.) Yes, certainly.

(Witness.) The supply available per day is given here as 294 millions; but there is not the faintest pretence that that supply was available without further works. There is not a single company that could have supplied that quantity without further works.

19,120. *(Mr. Balfour Browne.)* It says available?—Certainly available; it is there, but it is not available in the sense that you cannot put it into the supply mains without further works.

(Mr. Pope.) It is available, but it cannot be used without further works.

(Witness.) There is not the faintest intention of suggesting that that quantity could be used without further works.

(Mr. Balfour Browne.) I will show what each of the companies stated in the Appendix, it is not in the Report.

(Major-General Scott.) I see that in paragraph 71, the Commission, comparing it with something of their own say: "As compared with this, the combined companies' forecast of the requirement in 1931 is 253,529,686 gallons a day, and their anticipated capability of supply at that date is 296,357,236 gallons." Therefore, I should argue from that that the capability of supply included all works.

(Mr. Pember.) Of course.

19,121. *(Major-General Scott.)* Does it not, Mr. Middleton?—At that date, certainly; when they were required, but not at the present time. There was no suggestion that at the particular time when this report was made they had the works that would supply 294 millions a day.

(Mr. Pember.) The Engineer of the East London gave the very strongest evidence that he should have to make very large works indeed. You will find his evidence in the Appendix.

(Mr. Freeman.) Not for that supply; that was for an additional supply altogether.

(Witness.) No.

(Mr. Pember.) No, his evidence was: "The above quantities may be largely increased by the storage of river water that now runs to waste. There are many sites in the Lea Valley, for instance"—he was talking of the Lea then—"well adapted for the construction of large storage reservoirs. My company have acquired a very large area for the purpose of supplementing their storage. They have 90 acres higher than their existing storage reservoirs"—and so on. Then if you look at paragraph 72 of the Report, you will see they always obviously saw, when they were talking of what they could do, that the companies, of course, meant what they could do with extended works and storage.

(Mr. Balfour Browne.) I am not on paragraph 72, but paragraph 71, to which General Scott has directed my attention. After stating the figures, it goes on: "From the companies' point of view there was manifestly no necessity to show that they would be in a position in 1931 to provide more than the above quantity, as it is nearly 17 per cent. in excess of the demand anticipated by them at that date. It should, however, be stated, that the representatives of all the companies who dealt with these figures, expressed the opinion that either by means of storage"—now that is beyond the 17 per cent.—"either by means of storage of the Thames and Lea waters, from the chalk, or from valley gravel beds, additional water in large volume might be obtained, if required. The specific figures above quoted must not be taken, therefore, as representing, in the opinion of the several companies, the measure of their capability of supply."

(Witness.) That is perfectly true as regards water, but not as regards works.

19,122. I do not know?—They did not suggest that they had those works.

19,123. Now, again, is it not the fact that every one of the companies that have been in Parliament in the last three sessions have come and asked for further works and further powers, upon the ground of immediate and pressing necessity?—Yes.

(Mr. Pember.) They found the time was coming very soon when they wanted more storage.

(Mr. Pope.) Yes.

19,124. *(Mr. Balfour Browne to witness.)* Is it your opinion that the amount which was calculated as so available by the Balfour Commission, namely, 420 million gallons, can be increased?—Yes.

19,125. I think it is a fact, is it not, that the 52 million gallons, part of the 420 million gallons which was to be derived from the River Lea, has broken down as regards the East London Company on four separate occasions since that report?—The 52½ million gallons was to be provided with proper storage.

19,126. We will come to that?—That proper storage has not yet been provided; when it is, 52½ million gallons can be obtained from the Lea.

19,127. We will come to the storage, I am just going on to that immediately; but, as a fact, since 1891 they have not been able to get the 52½ millions?—That is more than I can tell you.

19,128. Is it not a fact that in 1891 the storage of the East London Company was only 610 million gallons and that it is to-day 1,210 million gallons?—Yes.

19,129. And yet the worst breakdown is the last breakdown, is it not?—Yes, I believe it is the worst.

19,130. Although they have more than doubled or just doubled their storage capacity since the Report of the Balfour Commission?—Yes, it only shows that it is not sufficient.

19,131. It shows that it is not sufficient. In 1897 they came for power to construct additional storage?—Yes.

19,132. To the extent of 1,015 million gallons?—Yes.

19,133. Am I right?—Yes, I believe so.

19,134. That would raise their total storage capacity to 2,225 million gallons?—Yes.

19,135. Of course, I know they may be going for more, as we hear, but that, up to this date, is all that they have proposed to provide?—Yes.

19,136. Have you calculated out the figures of that storage capacity and will you tell me that if they supply the 32½ million gallons (their average supply for the last six years) and gave to the navigation the 5,400,000—is it not the fact that with all that storage their reservoirs would have been empty on the 3rd July last?—I have not calculated it out, and therefore I am afraid I cannot answer your question.

19,137. Again, I suppose you would say that that would show that the storage then contemplated in 1897 was not sufficient?—Certainly; supposing it to be true, it would not be sufficient.

19,138. Have you any reason to doubt that that is so?—No, I daresay it is perfectly correct, I simply do not know.

19,139. Therefore, you will agree that without an increased storage beyond what was sanctioned in 1897 they cannot get the 52½ million gallons that the Balfour Commission calculated upon?—Are you not putting down the 52½ million gallons to the East London? The 52½ million gallons is from the Lea.

19,140. I am taking the total supply from the Lea?—22½ million gallons of that are taken by the New River.

19,141. I am quite aware of that and I am taking the total from the Lea—

(*Chairman.*) What you have just put would be true for another year like 1893.

(*Mr. Freeman.*) Yes.

(*Mr. Balfour Browne.*) Quite so, my Lord—a bad year.

(*Chairman.*) As bad.

(*Sir George Bruce.*) It had a worse rainfall than we have had since the year 1814, at all events.

(*Mr. Balfour Browne.*) Still, sir, I believe it is the rule of water engineers to look at the worst and to provide for the worst.

(*Sir George Bruce.*) Yes.

(*Mr. Pember.*) It ought to be borne in mind that, not only have we not had the 2,200 millions, but we have not even had the use of the whole of the 1,200 millions, because the reservoirs are not finished.

(*Mr. Freeman.*) These calculations have nothing to do with that.

(*Mr. Balfour Browne.*) This calculation proceeds upon the supposition that you had the use not only of the 1,210 millions, but also of the 2,225 millions.

(*Mr. Pember.*) Or, in other words, if you choose to make it so, at 32 millions a day, 2,225 millions is 70 days' consumption in the reservoirs.

(*Witness.*) Is it not true that Sir Alexander Binnie said only a very short time ago that the East London had plenty of storage?

(*Mr. Balfour Browne.*) I really do not know; you may know more about it.

(*Witness.*) Then I think it is rather a strong argument on the matter.

19,142. (*Mr. Balfour Browne.*) According to you, if these figures are right, you have said that they had not sufficient storage in 1891, because they have increased it?—Yes.

19,143. They had not sufficient storage in 1897 because they came and increased it again, and if the reservoirs with all that storage would have been dry on the 3rd of July, they have not yet proposed sufficient storage?—I am rather doubtful about the 3rd of July.

19,144. If they would have been empty on the 3rd of July?—If they would, but I am a little doubtful, because I think you cannot have taken into account the wells.

19,145. You have got the whole of the data, and you can calculate it, and show where I am wrong?—Yes, I have and I can, certainly.

19,146. Now to go to another matter, I daresay you are aware that the East London Company told the Balfour Commission that they could obtain 11 million gallons from their then existing wells in 1892; are you aware of that?—I think not.

19,147. If you look at paragraph 10, you will see that from the Lea and Storage reservoirs—

(*Mr. Pember.*) All these statements, my Lord, that have been made by the engineer of a particular

company should be asked of the engineer, because we are going to call Mr. Bryan.

(*Mr. Balfour Browne.*) Very likely I may have to ask Mr. Bryan, but I thought this gentleman was covering the whole ground.

(*Mr. Pember.*) No; he cannot be made responsible for what Mr. Francis has said.

(*Mr. Balfour Browne.*) Forgive me, it is upon his statement I am cross-examining.

(*Mr. Pope.*) I do not think the witness can be made responsible, but let us see the shape of his argument.

19,148. (*Mr. Balfour Browne.*) It is upon his statement that what was calculated by the Balfour Commission could be increased that I am going to show that every source, barring the Thames, has decreased since that date. (*To the witness.*) Is it not the fact that in their own statement the East London Company showed that from the company's existing wells in the Lea Valley they could get 11 million gallons?—Will you kindly show me where that is?

19,149. It is upon page 10 of the Appendices to the Minutes of Evidence of Lord Balfour's Commission, it is in a little table called Statement of the Company—I do not know whether you have got it, my Lord—it is just under your pencil I think. There they are giving their sources, and they calculate that altogether they can get 53 millions, and from further wells—that is, new wells to be sunk, some of which are now being sunk—13 millions; and, if you look above there, from the company's existing wells in the Lea Valley, 11 millions.

(*Witness.*) Yes, that is so.

19,150. Now is it not the fact that although they were at their wits' end for water in August last, they could not get the 11 millions, but the total they could get was 9,553,000 gallons?—Yes, that I believe is correct.

(*Mr. Pember.*) Yes, but of course that must be taken in connexion with the substantive evidence of Mr. Bryan, in which that very point is put to him, I think, by Sir George Bruce. At the present moment, he says, taking what you have got from the wells by the company, last year it was only 3,631,000 gallons; and the answer is: "That is quite so, perhaps I have not explained it sufficiently clear. I say the yield on "that well is capable of producing 5 million gallons a "day"—that means with proper pumping appliances.

(*Mr. Balfour Browne.*) Then this table shows that he was calculating on 11 millions, and at the time when he wanted it most he could only get 9½ millions. Now I want to ask a similar question about the New River.

(*Chairman.*) Mr. Balfour Browne, I think you may assume that nobody in 1891 or even in 1896 foresaw such a drought as we had this year—and that modifies it.

(*Mr. Balfour Browne.*) This is not directly connected with the drought, this is deep well water which would be stored for a considerable number of years, possibly.

(*Sir George Bruce.*) The wells are affected by the drought.

(*Chairman.*) Yes, they are.

19,151. (*Mr. Balfour Browne.*) Not immediately, though they are, of course, ultimately, and must be. (*To the witness.*) Is it not a fact that in a drought you have to rely upon past storage in the strata from which you are drawing?—To a certain extent, but, of course, as the Chairman has stated, there will be a decrease in the well water in the dry season just as much as there would be in the river water.

19,152. Of course, we know that if water does not fall it cannot get underground, but is not pumping from wells having recourse to an underground reservoir where storage takes place just as for service water you store in overground reservoirs?—An underground river.

19,153. I know your theory about it and I will not go back upon that just now, but it is an underground river which flows very slowly and which may be getting its supplies from two or three years before?—No, not from two or three years before.

19,154. How many years—can you say or anybody else?—From the year before.

19,155. (*Major-General Scott.*) Is it within your knowledge that the East London Company are increasing their pumping power in the wells?—Yes.

(*Mr. Pember.*) We took large capital powers for the purpose a year or so ago—80,000.

Mr. R. E. Middleton.

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Mr. R. E. Middleton. (*Major-General Scott.*) I wanted to know whether Mr. Middleton knew about it.

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(Witness.) I do not know the facts and I do not know what they are doing. I was down at their works a little while ago and I saw some of their wells, but I do not know to what extent they are going.

(Mr. Balfour Browne.) Of course, if you pump more out, that is one of the questions my friend Lord Robert Cecil has to deal with, but I am dealing simply with the evidence that with their existing wells they could get 11 millions.

(Mr. Pope.) Existing wells, but not existing means of utilising the wells by pumping.

(Mr. Balfour Browne.) Yes, that table would certainly show.

(Mr. Pope.) It is one thing to say that thing is available and it is another to avail yourself of it. You may have a thing available, but you must provide means to avail yourself of it before you can say you can utilise it.

(Mr. Pember.) That additional capital that we took in 1894, to which I was alluding.

(Mr. Balfour Browne.) It is almost impossible with these interruptions to get on.

(Mr. Pember.) What we want to do is to assist the Commission. This is not a game of play.

(Mr. Pope.) It is a personal explanation; it is nothing more.

(Mr. Balfour Browne.) In the meantime I am dealing with one mind, and when another one or two interrupts it makes it a little difficult.

(Mr. Pember.) I will just say this: the capital we took in 1894 was not to sink fresh wells, but to apply new machinery to existing wells—that is the 80,000*l*.

(Chairman.) The word available is perhaps a little misleading.

(Witness.) That is so.

(Chairman.) If a man has got a leg of mutton in his kitchen, but no coal, I am sure I do not know whether the leg of mutton is available for his dinner or not.

(Mr. Balfour Browne.) It certain would be available because he might eat it raw.

(Witness.) He might go down the well and drink the water there.

(Mr. Pember.) And the sheep is not available until you have caught him.

19,156. *(Mr. Balfour Browne.)* Now I want to ask you about the New River Company. Are you aware that the New River Company told Lord Balfour's Commission that they could obtain from their existing springs and wells 34 million gallons a day?—That comes exactly under the same head, I have pointed it out very strongly already.

19,157. Are you aware that the greatest quantity they have ever pumped was in September last, and that that was 26,977,000 gallons?—Yes; but as I have pointed out before, not once or twice, it is again available—the water was there, but the machinery to take it out was not.

19,158. If it is available, will you tell me why the New River Company has abandoned the Lea Valley for its future supply and gone into partnership for the Staines Scheme, taking it from the Thames?—I think, if I remember right, that at the same time that the Staines Act was got they also went in for a Bill for providing storage reservoirs and further wells in the Lea Valley, and they had to choose between the two.

19,159. And they elected the Thames?—Well, I think they had to elect the Thames.

(Mr. Pope.) We were afraid of Lord Robert.

19,160. *(Mr. Balfour Browne.)* I do not wonder after his cross-examination the other day. (*To the witness.*) Do you mean that the proposal to take further water from the Lea Valley by means of wells was rejected? Is that what you mean?—It was not rejected; it never came forward for rejection.

(Mr. Pope.) It was withdrawn.

19,161. *(Mr. Balfour Browne.)* It was rejected by the company?—It was not rejected by the company, but they abandoned it for the time being.

19,162. And went to the Thames?—And went to the Thames.

19,163. Do you agree with what appeared in the "Times" the other day from Lord Balfour, that the distinct obligation should be laid upon any company or local authority which is allowed to pump water from the chalk for the purpose of pumping to supply, to keep accurate observations of the effect of their operations on the level of the water in the wells from which they pump?—I do not see why they should not.

19,164. Has that ever been done?—I really cannot tell you.

19,165. Are you aware that that was the recommendation of the Commission in 1891?—Yes, they did mention something of the kind.

19,166. And you do not see why that should not be carried out?—I see no objection to it—speaking simply personally.

19,167. Now, you told the Commissioners the other day—and I will not go over this in any great detail, because my learned friend Lord Robert has cross-examined you to it—that the pumping from wells in the Lea Valley had no effect upon the flow of the river?—I did not quite say that; I said it had a very limited effect.

19,168. Then it has an effect upon surface streams—If you remember, the question of the Amwell Spring was brought up and General Scott asked me about that, and other places, whether if a well was put down where a spring was rising it would absorb that spring, and I said, yes, and I say, yes, again, if a well is put down wherever a spring is rising, that spring will be absorbed by the pumping, and to that extent the river will be depleted.

19,169. And the question really, apparently, between yourself and the Hertfordshire authorities is to what extent will that effect be propagated to a distance?—It cannot be propagated to a distance above.

19,170. That is what you say?—Yes.

19,171. And you assume that there is a large body of water flowing down the Lea Valley in the chalk, to be discharged into the Thames at some outlet of which you know nothing?—At some point. I do not say into the Thames; it may be into the sea.

19,172. It may be, of course; but that is even more indefinite?—That is so.

19,173. You know nothing of the outlet?—I cannot tell you where the outlet is.

19,174. Is it the fact that the water-level under London in the chalk is falling at the rate of from 12 to 18 inches per annum?—Yes.

19,175. Is that, in your view, because more is taken out than comes in?—More is taken out than can get in.

19,176. Than can get in?—Not that comes in, but that can get in.

19,177. Owing to the pinch, to use your own word?—Yes.

(Mr. Pope.) Nipping was the word.

(Witness.) Nipping was my word.

19,178. *(Mr. Balfour Browne.)* I beg your pardon; it is a synonym—owing to the nipping of the clay over the chalk?—Yes.

19,179. Is it not a fact that that nipping has the effect of retarding the flow of water in the chalk, and throws it out where the pressure comes on?—To some extent, yes.

19,180. And if I relieve that nipping by making, so to say, underground channels or pumping, I can facilitate the water getting out of the chalk?—To some slight extent, yes; but not entirely.

19,181. I do not know what not entirely means—but I can facilitate it to some slight extent?—Yes, you can facilitate it.

19,182. Do you also agree that, "The ground"—this is from the Report of the Royal Commission, paragraph 105—"The ground east of the Lea basin, and north of the Thames, may be left out of account in any inquiry into the future water supply of London"?—As regards well sinking?

19,183. Yes?—I think so.

19,184. That was in the Report of the Royal Commission, and you agree?—Yes.

19,185. Of course, we are all agreed that the water in the chalk in the Lea Valley is derived from the rainfall on the chalk formation in Hertfordshire?—Yes.

19,186. Do you agree with this statement, which is taken from Lord Balfour's Report, paragraph 129, page 54—I am going to found a question upon it—that the rest-level of the water in the Lea Bridge well is 10 feet below Ordnance datum? The Lea Bridge well is one of the wells of the East London, is it not?—Yes.

19,187. And that at the Walthamstow well—is that another East London well?—Walthamstow is another East London well.

19,188. It is 15 feet below Ordnance datum?—I have no doubt those are correct.

19,189. And they express the opinion that there can be little doubt that the rest-level is depressed at the south end of the Lea Valley, because of the lowering of the water by exhaustive pumping under London. Do you agree with that?—No, I should doubt if that is the fact.

19,190. You doubt that?—Yes.

19,191. If that is true, how can the chalk water in the lower part of the Lea Valley be flowing into the Thames or into the sea?—You mean to say, if this is the true rest-level?

19,192. Yes?—It could not be if it was the true rest-level.

19,193. In fact, it would have to flow 20 to 27 feet uphill to get into the Thames?—But the rest-level in a well is not always the rest-level of the water in a stratum.

19,194. Not always?—No, it may be lower.

19,195. It is the only way in which you can tell what the rest-level in the stratum is, though?—Just so.

19,196. Are you aware that, the rest-level being 10 to 15 feet in these two wells, the high-water mark in the Thames is 12½ feet above Ordnance datum, making a difference of from 22 to 27 feet?—Certainly.

(Mr. Pember.) Read paragraph 130, Mr. Balfour Browne; they point out that there are anomalies about those wells.

19,197. (Mr. Balfour Browne.) Very likely; but this would be the worst anomaly of all, would it not, Mr. Middleton? If you found that these rest-levels indicated the level of the water in the stratum, it could not be flowing into the Thames?—I do not think that that is necessarily true.

19,198. Now let us see. Is it not the fact, or is it not much more probable, that as the rest-level is depressed at the mouth of the Lea Valley the chalk is being supplied in those lower reaches of the Lea by water from the Thames or from the sea?—No.

19,199. Are you aware that all round the coast—Eastbourne, South Shields, West Cheshire, West Hartlepool, and Liverpool—the result has been that pumping from strata near the sea has produced brackish water for supply?—That is perfectly true, but then they had not a sufficient head of water behind it to drive the fresh water seawards.

19,200. Quite so, and it entirely depends upon whether there is a sufficient head of water behind this to keep back the Thames brackish water?—Certainly.

19,201. If you diminish the head by pumping, you tend to bring in the sea-water, do you not?—If these levels—

19,202. Answer the question first?—Certainly.

19,203. You do?—That would be so.

19,204. Now go on?—If these levels are correct, of course the sea-water would have been there long ago.

(Mr. Balfour Browne.) Is now, perhaps.

(Chairman.) Before Mr. Balfour Browne passes from that paragraph, is not the finding of the Balfour Commission inconsistent with your view, that pumping cannot diminish what you have called your underground river above the spot of pumping? This paragraph states that pumping under London has depressed the level above.

(Mr. Mellor.) In the Lea Valley.

(Witness.) Yes, supposing that to be correct, but, of course, the pumping is very close by, almost within the area of exhaustion of the wells. There are wells quite close by these that are pumping in London. At the

same time, I do not think that I can agree with the statement under any circumstances.

19,205. (Mr. Mellor.) Do you understand that paragraph as referring to wells that are in the Lea Valley?—I should say so, undoubtedly.

19,206. It does not say so?—No, it does not say so, but I should say it certainly means them.

19,207. (Chairman.) It says the water, by exhaustive pumping under London, has depressed the level above?—Then I am afraid I cannot agree with it at all.

(Mr. Pember.) Compare what they say on the top of page 55, "As no permanent lowering has as yet taken place similar in character to that," and so on.

19,208. (Mr. Balfour Browne.) May I say that it is quite clear, Mr. Middleton—you may differ from it, but if you accept that the pumping in London has depressed the level, that would mean that you were lowering the head up in the chalk beyond the place where you were dipping your bucket in; you may accept it or reject it, but if you accept it, it would be against your theory and in favour of the theory put forward by Lord Robert Cecil?—It might be. It is a little difficult to say exactly what this paragraph meant; but I can only repeat what I have said before, that I am perfectly certain that outside the radius of the cone of exhaustion it is impossible for a well to deplete the water above in the stream.

(Mr. Balfour Browne.) I know you did discuss that.

19,209. (Major-General Scott.) Is it not a question how far the cone of exhaustion extends?—Certainly. The cone of exhaustion is a variable quantity, but it is within very narrow limits.

19,210. (Mr. Mellor.) Does it depend upon the nature of the soil?—It depends upon the nature of the soil, certainly, but it is within very narrow limits.

19,211. (Major-General Scott.) You do not have an abrupt termination in the cone of exhaustion, do you?—It varies very little wherever I have been able to experiment upon it.

19,212. (Mr. Balfour Browne.) It has got a fringe, I think?—It varies within a very short distance.

19,213. (Major-General Scott.) Wherever there was a fissure abutting on the well the exhaustion would extend considerably further, would it not?—You mean to say that it does not form a line?

19,214. Yes, that it does not form a line?—A line which is a segment of a circle or anything of that kind? Certainly not. It varies according to the size and dimensions of the fissures and their direction, and if there is a larger fissure, the line will be carried out further by that fissure.

19,215. It may taper off very gradually?—Certainly, undoubtedly.

19,216. Before it joins the general level?—Yes, certainly.

19,217. And it is a very difficult thing to say how far it does go, is it not?—It is very difficult. The ordinary gradient is about 1 in 10, therefore, you may tail it off to 1 in 20, and still it will not be anything very large.

19,218. (Chairman.) I see this paragraph speaks of the Walthamstow well being one mile north of the Lea Bridge?—Yes.

19,219. And the Lea Bridge well is north of London?—Yes.

19,220. And it states that the pumping under London has lowered the rest-level even in the Walthamstow well?—I do not think that is so.

19,221. The paragraphs says so?—Yes, I quite agree.

19,222. Therefore, it assumes that the pumping has had an operation more than a mile north of the place where the pumping takes place?—A mile is a thing that I should say is quite possible—a mile, but not very much further. I think, in general, it is not very much more than a quarter of a mile—from a quarter to half a mile.

(Mr. Pember.) That last paragraph 130 seems to contradict that again.

(Mr. Balfour Browne.) And the wells of those companies extend over an area of how many miles?

(Mr. Pember.) Read it.

(Chairman.) That applies to the higher valleys, not to the Walthamstow well?

Mr. R. E. Middleton.

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Mr. R. E. Middleton. (Mr. Pember.) No, that is what he said the other day.

5 Dec. '98 (Mr. Balfour Browne.) Over how many miles are those wells of the companies sunk?

(Mr. Pope.) The cone of exhaustion would not reach to the higher valleys.

(Mr. Pember.) That is what he said the other day.

(Witness to Mr. Balfour Browne.) I really do not remember the distance from Lea Bridge to Ware—they run up to Ware.

19,223. (Mr. Balfour Browne.) To Ware—is it 10 miles?—That is quite 10 miles; I think it is rather more.

19,224. So that within that 10 miles and a mile on either side—within 12 miles—you admit that they may be dry in Hertfordshire?—They may.

19,225. Further than that, and apart altogether from the cone of exhaustion—I have no right to put this, because I think it was made perfectly clear by Lord Robert—supposing you have water—would you follow this diagram—that will fill that pipe at that point with an orifice only equal to one-fourth of it, of course the water must be backed up?—I do not quite see it.

19,226. The water is sufficient to fill that pipe if it got a free flow; it only can get one-fourth—do you follow?—No, I am afraid I cannot follow you.

19,227. Take a pipe the same diameter throughout?—A vertical pipe.

19,228. No, take it as lying horizontally, but the same diameter throughout; the same amount of water can get through every part of it?—Yes.

19,229. If you at one point in the pipe diminish the diameter to one-fourth, it is quite obvious that the same quantity of water cannot get through then?—Certainly.

19,230. You will have a backing up of the water in the pipe above the point of constriction?—Of course, you will not be able to get so much through.

19,231. Now, supposing I relieve that constriction by putting in a big well there, and make the orifice equal to the whole diameter of the pipe, should I not affect the whole of the water in that flowing river?—No, I am sure you cannot, because it is not a pipe.

19,232. It is a river, you said?—Yes, it is a river.

19,233. Which seems to me very like half a pipe —

19,234. (Chairman.) It is an underground river, so it has got a top as well as a bottom?—Yes.

(Mr. Balfour Browne.) And is flowing under the clay, therefore, it is in a pipe.

19,235. (Sir George Bruce, to the Witness.) Can you tell us what connexion this evidence has upon the desirability or otherwise of purchase?—I have not the faintest idea, Sir George.

(Mr. Balfour Browne.) I could show that, but I dare say Mr. Middleton cannot. All these calculations of Mr. Middleton are to this effect—that the amount that was calculated upon by the Balfour Commission can be increased. If it cannot be increased, then I think we will have to go to Wales sooner. I am trying to show that he is calculating upon increasing largely the amount that can be drawn from Hertfordshire, when he cannot calculate upon that amount.

(Witness.) Excuse me; I have not increased the quantity from Hertfordshire at all; I have taken exactly the figures that were given to Lord Balfour's Commission.

(Mr. Balfour Browne.) I am trying to show that they were over-calculated in the Balfour Report.

(Sir George Bruce.) That point is not before us.

19,236. (Mr. Balfour Browne to Witness.) I was upon the question of drawing in sea water. If you draw in sea water, you would have, of course, to abandon all the wells in the lower Lea Valley?—If the water came back, yes.

19,237. Is not it the fact that Mr. Whitaker, the geologist, stated before the Balfour Commission, at Question 2271, page 354, that the wells in Essex, on the Thames, near to the sea at Purfleet and Grays, get salt water?—That, I should think, was exceedingly probable.

19,238. So that, apparently, the process of taking water from the sea, has begun in those districts?—I think it has begun at Eastbourne also; but that does not apply to Lea Bridge.

19,239. Is it not fact that the well at Eastbourne, Bedford well, has had to be abandoned in consequence?—Yes.

(Mr. Pember.) I think they had sunk down to the sea level.

(Mr. Balfour Browne.) Your wells are a long way below sea level.

(Mr. Pember.) Yes. They were on the seashore too.

(Mr. Balfour Browne.) No, they were not.

(Witness.) Very nearly. Purfleet is also quite close to the sea, and so is Grays.

19,240. (Mr. Balfour Browne.) Here is that very place, Purfleet, which you were calculating the water came in at. According to Mr. Whitaker, the water is brackish; the more water you take out of that river behind Purfleet, the more chance there is of getting brackish water in; I think you have agreed that with me already?—No, I do not think I quite agreed to that.

19,241. Clearly; it is the fresh water that keeps the brackish water from coming in?—Certainly; that is perfectly true.

19,242. The more you take out, the more chance the sea has of coming in?—Yes; but there are a good many other considerations as regards Purfleet. There is a very large fault there, and I do not know on which side of the fault these wells of Mr. Whitaker were sunk; therefore, I cannot tell whether there was a large backing of sea water, or whether there was not.

19,243. Now, under the circumstances, seeing that the East London have failed to get what they thought they would, and that the New River have gone to the Thames, does it not rather look as if, in their opinion, the Lea was becoming to a large extent exhausted?—No, I do not think so.

19,244. I will ask a question upon what you said as to the Kent; the Kent Company have been pumping only 18,686,384 gallons, call it 18½ million gallons, in August last, out of the 27½ millions mentioned by the Balfour Commission?—Yes.

19,245. That was the total amount that they could calculate upon drawing, I think, according to the Balfour Commission; are you aware that grave complaints have been made, that in consequence even of that 18½ millions being taken, the streams are being dried up in Kent?—No, I was not aware of the fact; but take the Orpington well, for instance; if I put a well right at the head of the stream, it is probable that the stream below will be affected, and I have always said that it would.

19,246. Is that what they have done?—That is what they have done in the case of the Orpington well.

10,247. And that well accounts for a part of the 18½ million gallons?—Certainly.

19,248. Now you told the Commission that a large amount of water can be supplied from the district of East Kent?—Yes.

19,249. This is one of the sources that you are looking to for increasing the amount calculated upon by the Balfour Commission?—Yes.

19,250. Have you yourself gauged or measured this water?—The whole of it, no, certainly not.

19,251. Or are you simply relying upon what was stated in evidence before Lord Balfour's Commission?—I am relying on what was stated in evidence before Lord Balfour's Commission.

19,252. Are you aware that since that Commission reported, the district in East Kent has been carefully examined, the gauging of springs has gone on and observations of 400 wells have been carried on since 1893?—No.

19,253. And you give your opinion that a large amount of water can be obtained without knowing that that has been done and without knowing the result?—Yes, I give it on the basis of Lord Balfour's Commission.

19,254. Surely, if further investigations have taken place since then, you ought to have corrected it for slip and short stroke, ought you not?—I should if I had been able to get them.

19,255. (Mr. Pope.) If they were reliable?—If they were reliable ones which I should prefer to have taken myself.

19,256. (Mr. Balfour Browne.) You did not know even that they had been taking place?—I did not.

See 1
-31.

19,257. An observation of 400 separate wells would be pretty exhaustive?—I do not think so. I do not think it would give you much information.

19,258. Nor the gauging of all the outlets?—I think you would find it rather a busy time to gauge all the outlets on the coast.

19,259. You did not know that it had been done?—I knew that some had been done, and some I gauged myself, but I did not gauge anything like sufficient to be a reliable datum to go upon.

(*Chairman to Mr. Balfour Browne.*) I have followed your cross-examination with the greatest care, and it seems to me that all tends to this, namely, that the supplies of water enumerated by Lord Balfour's Commission are not reliable supplies, and that the needs of the companies will be greater than they then estimated.

(*Mr. Balfour Browne.*) Yes, my Lord.

(*Chairman.*) And that consequently the urgency of going to Wales is demonstrated. That seems to me the drift of your cross-examination so far.

(*Mr. Balfour Browne.*) Mainly, yes.

(*Chairman.*) Do remember that we have nothing in the world to do with deciding the question whether the water in the Thames or the Lea will be sufficient for the future wants of London or not, and if you satisfy us that you must go to Wales peradventure, that will be an argument against what is our sole subject of inquiry, namely, the financial expediency of purchase, because it may entail possibly—I do not say it will, but possibly it may—a much larger expenditure upon the purchaser than he otherwise would have to incur. Therefore, do remember that our business is simply to say, is it financially expedient to purchase? We must take into account the probable cost of the companies, and the probable future expenditure by the purchaser. You are seeking to demonstrate that the purchaser must construct 162½ miles of conduit, and dam up several Welsh rivers.

(*Mr. Balfour Browne.*) Yes, my Lord, and when I come to show what the Staines would cost on completion, I think it would all be seen to bear upon the question.

(*Chairman.*) It, of course, is quite open to you to say that Staines is more costly than Wales.

(*Mr. Balfour Browne.*) You see what Mr. Middleton has done. He has gone beyond the Balfour Report and said: "I can carry on even beyond 1931," and I wanted to break down that. First, I say you have to anticipate 1931 by a very much earlier date.

(*Chairman.*) Very well, that is an argument against the financial expediency of purchase, because it is increasing the cost.

(*Mr. Balfour Browne.*) I think not, my Lord.

(*Chairman.*) Very well.

(*Mr. Balfour Browne.*) It means that the money that is at present expended will not do until 1931, and that anybody, whether it is the Companies or the County Council, will have to anticipate a large expenditure soon.

(*Chairman.*) That will not diminish the cost of purchasing the companies as they stand; it will only add to the future expenditure that the purchaser will have to incur.

(*Mr. Balfour Browne.*) Then it comes, my Lord, to this, whether it is not expedient financially to pass these works into the hands of the person that can do it cheaply, or to leave them in the hands of the companies that will do it dearly.

(*Mr. Pope.*) That is an assumption.

(*Mr. Balfour Browne.*) I am perfectly certain that we can borrow money cheaper than you can raise it by shares.

(*Mr. Pope.*) Do you think so?

(*Mr. Balfour Browne.*) I do think so.

(*Chairman.*) You cannot promise 10 per cent. and back dividends.

(*Mr. Balfour Browne.*) The back dividends we will discount very largely when we come to consider them.

(*Chairman.*) At any rate, do please bear in mind what our business is.

(*Mr. Balfour Browne.*) I do, my Lord. I will remember your observation, and I will make it shorter. *Mr. R. E. Middleton.*

After a short adjournment.

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19,260. (*Mr. Balfour Browne.*) You stated in your evidence that you did not think the existing or future population in the Thames Valley would have any effect on the future water supply of London?—Any injurious effect.

19,261. Any injurious effect, I mean. You do not suppose it is going to have a beneficial effect, do you? It may have a beneficial effect, because they might introduce a better system of sewage disposal, and therefore, improve—

19,262. Is it defective just now, then?—I do not suppose it is as good as it might be.

19,263. Not so good as it might be?—I do not suppose it is.

19,264. The Report of Lord Balfour's Commission, on page 536, stated that the population above the intakes in 1891 was 1,056,415. Do you know that in 1851, going back 40 years, it was only 762,273?—No, I was not aware of the fact, but I daresay it is quite correct.

19,265. That is merely a census return, of course, and I daresay you will take it?—Yes.

19,266. Now, if that is accurate, that would show an increase during that 40 years of 294,142 persons?—Yes.

19,267. Have you calculated what, on any ratio of increase, would be the population above the intakes in 1891?—I have not.

19,268. If I take it at the same ratio as it increased in that 40 years, it would come out at 1,463,000 persons?—Yes.

19,269. Do you mean to say that that large population would have no effect upon the river?—No injurious effect.

19,270. First of all, would not the people in the drainage area of the Thames themselves want water? I presume they do now.

19,271. And if there was that enormous increase which I have suggested, they would want more?—They would want more.

19,272. And, of course, small places must have local sources of supply, comparatively speaking; they cannot afford to go great distances?—They generally do.

19,273. And if that population was using the water, the sewage from that population would have to pass in a more or less clarified condition into the river?—It would have to pass into the river.

19,274. Would it be fair to take the sewage discharge of this population at 20 gallons a head?—Yes, I should think so.

19,275. If so, that would amount in 1931 to 29½ million gallons a day of sewage?—Yes. At present, of course, the population is over a million.

19,276. 1,056,000?—That was in 1891, was it not?

19,277. It will be more than that, because it was 1,056,000 in 1891?—Yes. I think it is considerably more than that now.

19,278. We know that the average discharge in dry weather in the Thames is more than 400 million gallons a day, and if there were 29½ millions a day of sewage, 7½ per cent. of the whole of it would pass through the drains?—Yes. I do not quite see where you get the 400 million gallons a day from.

19,279. Is not that about the average flow of the Thames?—No.

19,280. In dry weather?—Yes, in dry weather.

19,281. I said in dry weather?—I know you said in dry weather; dry weather flow over all the years, you mean.

19,282. Yes. It would be about that?—Yes.

19,283. And taking it upon that, of course, when it is a flood it does not so much matter, because the quantity of water is so much greater, but, after all, 7½ per cent. would have to pass through the human body?—No.

19,284. Or through sewage farms?—Yes.

19,285. Would be the effluent of sewage farms?—Yes.

Mr. R. E. Middleton. 19,286. (*Mr. Mellor.*) And that is apart altogether from agricultural drainage, of course?—Yes.

5 Dec. '98 19,287. (*Mr. Balfour Browne.*) Of course, a great portion of the Thames Valley is heavily manured?—Some of it is heavily manured, no doubt.

19,288. And I think, according to the Royal Commission Report, there were more than a million animals living and pastured in the Thames Valley?—Yes.

(*Sir George Bruce.*) I do not see what this has to do with it. I understand Sir Alexander Binnie proposes to go for 185½ million gallons of this water anyhow per day.

(*Mr. Balfour Browne.*) Yes.

(*Sir George Bruce.*) So I do not exactly see what your object is in vilifying, if I may so express it, the Thames water.

(*Mr. Balfour Browne.*) I put it in this way—Mr. Middleton, departing from the Report of Lord Balfour's Commission, says: "I can take in all the water." The Royal Commission rejected 15 days of flood when the water would be at its worst.

(*Sir George Bruce.*) And when it has the least possible proportion of sewage.

(*Mr. Balfour Browne.*) But the greater amount of sewage, because it would be cleaning out everything in the first 15 days of the flood. I am assuming that that is a right proposal. In the meantime I understood we were always to regard that Report, for the purposes of this Commission, as gospel.

(*Chairman.*) Not quite as gospel—apocrypha, not gospel.

(*Witness.*) I do not think that the cleaning out is quite a right simile to use, because, when the rain falls, it falls on the land; it does not clean the sewage off the land, but it drives the sewage down into the land.

19,289. (*Mr. Balfour Browne.*) For instance, it takes the detritus mixed with the manure off the roads?—Off the roads, yes.

19,290. Therefore, in that way, when you have the first of the flood you have the worst water?—We have the worst of the water, undoubtedly; but, it is, of course, largely mixed with rain water.

19,291. If there is no objection to have all this drainage in above, why did Messrs. Hunter and Fraser put the intake of their Staines Scheme at a point above the place where the drainage of Staines, Sunbury, Weybridge, Walton, and Hampton discharged?—I think that Mr. Hunter had, perhaps, better answer that question himself, but there are obvious reasons for it. There are engineering reasons with regard to levels, to begin with—we should get it in at a very much higher level than we otherwise should do. Then, not only that, but at the time when that Report was made, Staines and almost all the villages alongside the Thames in that part of the river were cesspool villages, and they did not treat their sewage in any way.

19,292. Do you mean to say that if they did treat their sewage you would think it quite as eligible a site below these effluents?—If they treated their sewage properly, yes, certainly.

19,293. Do not you know that there are continual accidents in the Thames Valley—pipes breaking, and crude sewage getting into the stream?—I was not aware of it.

19,294. You were not aware of that?—I certainly was not.

19,295. As a fact, however, the sewage of all those places comes in below Bell Weir; and the proposal was to take the water above Bell Weir?—Yes.

19,296. You think that you can abstract, I understand, 400 million gallons a day, still leaving what has been called improperly a minimum; but leaving the water in the Thames when it falls to 200 million gallons or below it?—Yes, and more.

19,297. For how many days would the flow be reduced to 200 million gallons, or less, if you take that quantity?—It depends entirely upon the year.

19,298. I must take some year; 1898 will do?—I daresay 1898 will do for you.

19,299. I find Sir Alexander Binnie, on one of his tables, which I will refer to immediately, said in 1893

(if you object to 1898 as the worst year) the flow of the Thames would be reduced for 188 days to 200 million gallons a day, or below 200 million gallons; that was on the supposition that only 300 millions were to be taken. You would reduce it, of course, for a longer period if you took 400?—Yes.

19,300. How many more days?—The days that I have got for 400 are 195, but it would be a little longer than that, because the filling up of the reservoirs would necessitate pumping down to the 200 million level for some little time afterwards.

19,301. (*Mr. Mellor.*) What do you say to the year 1898?—The year 1898 is very much shorter—137.

19,302. (*Mr. Balfour Browne.*) One hundred and thirty-seven days?—Yes, that was up to the end of October. It is a little bit longer now—about 10 days.

19,303. That is not for the whole year?—No, but, still, it is only about 10 days longer up to the present time.

19,304. But even upon the figures of 1893 it would mean that the Thames was reduced to 200 millions or under for about 195 days?—I do not think there is any question about the "under," because the "under" never came into force in 1893.

19,305. I mean to say you do not guarantee 200 millions?—Certainly not.

19,306. You abstain whenever there is anything less than 200 millions?—Yes, and there have been only 10 days in which there have been less than 200 millions.

19,307. In 1893?—No, in any year. There were none in 1893, but in 1898.

19,308. But the average of one month in this year was 72?—I beg your pardon, that is after the taking of all the water by the companies. The natural lowest flow of the Thames at the same time was 212 for one month, and in the next month 271.

19,309. Quite so, but the result was that going down the Thames on one particular day—I daresay it is the worst, if I remember right—but on one particular day, after they had taken their quantity, there was about 43 millions?—That is so; but that has nothing in the world to do with the basis that we are speaking of.

19,310. It gives you the minimum on a particular day?—It gives you the minimum, but not the minimum natural flow of the Thames—the minimum artificial flow of the Thames.

19,311. You would have to add to the 43 whatever was being taken, not the 135, because that was not being taken; but whatever was being taken?—135 was being taken at that particular time.

19,312. Then they had machinery to enable them to pump the whole of that amount and distribute it?—I did not say so.

19,313. You said it was being taken?—It was being taken, but it could not be distributed—

(*Mr. Mellor.*) I do not want to interrupt, but I wish at the same time you would ask this question, as to whether there are any gaugings in the lower part of the Thames, which would tell us the depth of water at low water at these times when the various quantities have been taken out.

19,314. (*Mr. Balfour Browne.*) Is there any means of determining the depth upon any gauge at a place below the intakes?—I presume that the Richmond gauge would give you that information.

19,315. At the Richmond foot-bridge weir?—At the Richmond foot-bridge—I presume so.

19,316. Are you aware that Mr. More, the engineer to the Thames Conservancy stated, I think, before Sir Joseph Pease's Committee in 1896, that a less quantity than 200 million gallons a day over Toddington Weir interferes with the navigation of the Thames below Richmond?—I do not think that he said that, I think he said that it might interfere with it. But, at any rate, we have had the experience of this year, in which there has been down to 43 or 42·3 million gallons a day, and there have been, I believe, no complaints against the Thames made by any person using the Thames.

19,317. (*Mr. Mellor.*) I do not know whether you have any figures from which you can tell us what the depths of water at any particular point is?—No, I have no figures.

(*Mr. Pember.*) Of course, it would depend upon the conformation of the bottom of the river.

(Mr. Mellor.) I mean wherever the gauge happens to be—I am only asking the question as to whether there happens to be a gauge, and wherever the gauge is I should like to know the relative depth of the water. My difficulty is this: If a man tells me that there are 200 million gallons of water passing over a weir on a particular day, it conveys nothing to my mind; I do not know how deep the water would be at low water below that weir, that is my difficulty.

(Mr. Pember.) It would depend upon the width of the channel.

(Mr. Balfour Browne.) No, it does not depend upon that, but below Teddington the water is kept up by the weirs and it differs very little in the pond, as you can understand.

(Mr. Mellor.) Below Teddington, you mean.

(Mr. Balfour Browne.) Above Teddington.

(Sir John Dorington.) But there is a new weir a long way below Teddington now. Below Richmond Bridge there is a new weir.

(Mr. Balfour Browne.) Yes.

(Sir John Dorington.) At that weir there is a permanent depth.

(Mr. Balfour Browne.) Yes, absolutely kept up.

(Sir John Dorington.) Absolutely kept up. What is the condition of the channel below that weir? That is the point, I think.

(Mr. Mellor.) Yes, below that weir.

(Mr. Balfour Browne.) It is nearly dry, you will find, in the summer.

(Mr. Mellor.) As far as I remember, we have had no figures to show us what the depth of water is below that weir.

(Mr. Balfour Browne.) There is very serious complaint being made of the depth of the channel below Richmond, and there is a proposal to make another weir of a similar nature to pound up the water lower down.

(Witness.) I think that that is scarcely a correct view to take of the thing, because the water is impounded at Richmond at a half-tide weir, the water is allowed to run down by lifting the gates a little, so that that water is drained off during the low-water tide, and the water is kept up at a higher level below the Richmond weir than it used to be, and not at a lower level.

(Mr. Pember.) Would it assist the Hon. Member of the Commission, if I just read three or four questions and answers of Mr. More before the Royal Commission on this very point?

(Mr. Balfour Browne.) I was referring to his evidence before Sir Joseph Pease in 1896.

(Mr. Pember.) But this is before Lord Balfour's Commission. Mr. More is called on page 129 of the evidence. Would you like to read it, or not?

(Chairman.) Yes.

(Mr. Mellor.) If you will be kind enough to do so.

(Mr. Pember.) Then I will: "About the weir; what is your knowledge of the gaugings taken at Teddington; can you explain to us the system of taking them? You do not take them yourself, they are taken by an assistant engineer?"—(A.) Yes. If you would like, the gentleman who actually takes them is in the room at present, but I can tell you generally how they are done. (Q.) Then will you tell us generally?—(A.) The levels of the water are kept at every part of the day by a recording machine in the head water above the weir, which is automatic, I may say. "This diagram is used to calculate the flow, according to a formula of which this is a copy." Then he hands a document. "Have you got a section of the weir?"—(A.) No, I can put one in, but I have not one here. (Q.) Is the weir perfectly level?—(A.) Oh, no; it has several compartments, if I may call them so; it has deep gates that draw up, and it has what we call tumbling bays, where there is only a small flow; there is a different formula applied to each of these sections. (Q.) It would be as well if we had a drawing of it?—(A.) I will have a drawing furnished to you. (Q.) You have no test, by an exact experiment, of the quantity of water passing over any particular part?—(A.) Yes we have tested these calculations by current meter observations lower down, and we have found they nearly tied, as near as you could expect. (Mr. Mansergh.) Then you will

"let us have a drawing, so that we can understand this thing exactly?"—(A.) I will. (Q.) Where do you consider that the abstraction of water by the companies affects the river to? Down to what point does it affect the river?—(A.) I think it must affect it a little. (Q.) I mean appreciably?—(A.) Oh, not very far. (Q.) Further than Richmond?—(A.) I think I can give you the figures. (Q.) You said something about Kew just now?—(A.) Yes, I think it would affect it at Kew to some extent. (Q.) Take the low water section of the river between Teddington and Richmond; have you ever made any calculations to show how much deeper the water would be if the 100 million gallons now taken by the companies were left in?—(A.) Yes. I assume that if 500 million gallons were coming down the river, and 100 million gallons were taken out (that is taking the normal flow), it would lower the surface about 4½ inches."

(Mr. Balfour Browne.) Where are you reading from?

(Mr. Pember.) Page 129 of the Minutes of Evidence of Mr. More, the engineer of the Thames Conservancy, taken before Lord Balfour's Commission.

(Mr. Mellor.) Question 3,631.

(Mr. Pember.) "That is to say, if the 100 millions were left in, if 600 millions were coming in instead of 500, the water would be standing 4½ inches higher?"—(A.) Yes, that is so; and I think that if the total quantity that is authorised, the 130 million gallons, were taken out, it would make a further difference of about an inch and a half." I think that is perhaps what you want.

(Sir John Dorington.) At that time the new weir below Richmond had not been built?

(Mr. Pember.) No, it had not been built.

(Mr. Balfour Browne.) Just to make it a little more complete, I see Mr. More was recalled on the 13th of February 1893.

(Mr. Pember.) But perhaps you will just let me read one more question and answer. "(Q.) Where would that apply down to?—(A.) That would diminish—that is the effect of 4½ inches—"would diminish as you went down the river, and I do not think down at Hammer-smith it would have much effect at all." Then he is asked: "(Q.) You are now building a half-tide weir at Richmond?—(A.) Yes. (Q.) What will be the effect of that on the section of the river above that?—(A.) The effect of that will be to maintain a level of half-tide up to Teddington"—that is up to the weir. (Q.) What was the reason for the erection of that weir?—(A.) The Richmond people complained of the exposed foreshores; that was the principal cause of complaint. (Q.) The low-water level had been considerably lowered?—(A.) Undoubtedly it had. (Q.) Will you tell us by what means?" Then he goes at some length, as I remember, because I was in that Richmond Bridge enquiry, into what the true reason for the lowering of the low-water level at Richmond was, and that is, improvements in the bed of the river down below, and especially it had begun with the removal of what was in fact a weir, the old London Bridge.

19,318. (Major-General Scott.) Have you made any observations in regard to the rate of flow of the Thames at the intakes of the companies, when there are 200 million gallons a day, or something like it, going down?—No, the only observations I have made have been when there was considerably more than that going down—about 350, I think.

19,319. It would convey something to my mind if I knew what the flow was under those circumstances?—I should be happy to put before you all the observations that I have, General Scott, but I have not got them in my head at the present moment.

(Mr. Balfour Browne.) I will just read two or three questions and answers from Mr. More's further examination upon the 13th February 1893, page 471. He was asked: "You are of opinion that the 200 million gallons should not be lessened as passing over Teddington Weir?—(A.) I think there ought to be at least that amount left for the benefit of the reaches below Richmond." Then he gives evidence before Sir Joseph Pease's Committee, upon the 10th June 1896.

(Mr. Pember.) It is instructive, perhaps, to read that answer, 12,288, which is next to the 12,287 to which, I think, Mr. Balfour Browne is calling attention.

Mr. R. E. Middleton. (Mr. Balfour Browne.) Yes. I have not read that myself, but I was going to refer to what Mr. More said some years later, in 1896.

5 Dec. '98 (Chairman.) I have read that answer you refer to, Mr. Pember.

19,320. (Mr. Balfour Browne.) This 200 million gallons, which is to be allowed to go down when it is there, is in no way analogous to what we understand as compensation water?—No.

19,321. Compensation water is to keep up and increase the amount of the dry weather flow in periods of drought?—Yes. Then, of course, with compensation water you have the right to impound the whole of the water.

19,322. To impound the whole, but send down usually a third?—It depends.

19,323. Usually a third?—No.

19,324. Sometimes a fourth?—And sometimes a fifth.

19,325. It depends upon the interests in the stream?—Yes, certainly.

19,326. Now, I find here that Mr. More makes the matter a bit clearer, at any rate, to my mind, than in those questions and answers that were referred to. He is asked this before Sir Joseph Pease's Committee on the 10th June 1896:—"But, in your opinion, is it absolutely necessary, in the interest of the river, that the flow at Teddington Weir should be maintained at 200 million gallons?"—that is, not merely to allow the 200 million gallons to go down, but to be maintained. He says: "I think, in the interest of the neighbourhood below Richmond, it is absolutely necessary. As far as Richmond, the last weir on the river, it is not of so much importance, because the head-water there is kept up by a weir. (Q.) Will you explain to the Committee your reasons for that opinion?—(A.) I may say that where you have a weir you do not lower the surface of the water by taking this extra quantity, but you simply reduce the flow of the current somewhat; and as the water in the summer is very pure in the Thames, and there is very little silt in it, you would have no fear of getting deposit by reducing the flow of the current; but when you come below Richmond, you are, for the purposes of the navigation, entirely dependent upon the land water after the tidal water has gone away, which happens three or four hours before the low-water period. If you leave less than 200 million gallons, you render that part of the river almost unnavigable at low water altogether." That is what I was referring to?—We have had the experience of this year since then; and it has rather, I think, corrected that view—at any rate, I should think so.

19,327. Mr. More has not said so?—No.

(Mr. Pember.) He has not had the chance.

19,328. (Mr. Balfour Browne.) I had better read the next. "Does it also have the effect of leaving a large portion of the foreshore dry?—Yes, it has the effect of leaving a large portion of the foreshore dry, somewhat in the manner which happened between Teddington and Richmond, and which was really the cause of the Conservators having to build a weir at Richmond some years ago at an enormous expense." You agree, therefore, that from 188 days would, taking this larger amount, extend the period to what you say is 195 days, or probably longer—I do not know how much longer?—Yes.

19,329. I take it at 200—is that what you mean?—No, I should think it is a few days longer than that.

19,330. A few days longer than that?—It might be 210 days, or something like that.

(Major-General Scott.) Is that for the 400 million gallons?

(Mr. Balfour Browne.) Yes.

(Witness.) That is, of course, the worst year that we have to consider.

19,331. (Mr. Balfour Browne.) Is that on the worst year?—The worst year, because 1893 in length of drought was very much worse than 1898. The intensity was greater in 1898, but the length of the drought was much greater in 1893.

19,332. (Mr. Pember.) Of course, you are taking into consideration all the storage proposed when you give that answer, are you?—All the storage, of course, yes.

19,333. (Mr. Balfour Browne.) It is not a question of all the storage, but it is the utilisation of the 400

million gallons a day?—But that is a question of storage, of course. We cannot utilise it without storage.

19,334. Of course, you cannot utilise it, but it is taking the water out; you continue the period of minimum flow longer?—You continue the period of minimum flow longer.

19,335. You say 200 million gallons or less allowed to flow over Teddington Weir would have no scouring effect?—Yes.

19,336. Have you much experience of the régime of tidal rivers?—Well, I have been upon them all my life very nearly, I think—I have watched them, and so on.

19,337. I do not know in what capacity you have been watching them?—Boating, and so on. I take every opportunity of watching them.

19,338. Is not the very existence of the upper part of a tidal river dependent upon the existence of the fresh water flow?—It is dependent upon the flood water flow, not the fresh water flow, not the low water flow.

19,339. Do you mean to say in dry weather even the fresh water flow has not a tendency to assist the matter in going out to sea?—It depends on whether you mean silt or what sort of matter—floating matter.

19,340. Flocculent matter in the water?—Yes.

19,341. Of course, all silt is flocculent matter in the water at certain periods?—Until it settles.

19,342. And the more fresh water you have coming down, the further will the flocculent matter be carried before it deposits?—Certainly.

19,343. And without fresh water there would be no downward action whatever?—Without fresh water in the river at all, no.

19,344. There would be no downward action whatever?—But it is not entirely dependent upon that water going over Teddington Weir.

19,345. Do you know that there is no such a thing in Nature as a river-like tidal channel issuing from a sandy estuary kept open without fresh water?—No, I do not think there is.

19,346. Now, Lord Balfour's Commission, in paragraph 182, said that, "When 300 million gallons of water are taken, there will be left to flow down into the tidal portion of the river an average daily quantity of not less than 1,000 million gallons?"—Yes.

19,347. Is that correct?—Certainly.

19,348. Was not the average natural flow of the river at Teddington, including that abstracted by the Water Companies, 425·3 million gallons a day, as an average for 129 days in 1885?—I do not see that that has any bearing upon the matter at all. This is an average of a year—or is an average, rather, of 13 years.

19,349. An average of 13 years?—On an average of 13 years—not on the average of any of the months in a dry year.

19,350. Was not the average natural daily discharge at Teddington Weir, including the water abstracted by the Water Companies, 422 million gallons a day for 153 days in 1887?—I daresay it was, but it has no bearing on the question.

19,351. I see that by Sir Alexander Binnie's table the natural flow over Teddington Weir in 1893 was 297·9 million gallons in a day?—I beg your pardon.

19,352. The actual flow over Teddington Weir in 1893, was 297 million gallons?—For how long?

19,353. For 188 days?—That may be true—I do not know; but it has no bearing whatever on the question.

19,354. You think it has no bearing whatever on the question?—Not the slightest. The question was whether there is an average of 1,000 millions a day in the Thames, on the average of several years, after taking 300 million gallons out, and that is perfectly accurate.

19,355. The question is not exactly that; but the longer the period of small flow, the bigger you have to make your storage reservoir?—Certainly.

19,356. And the question is what you have to expend in order to store this quantity of water, considering that you have reduced the minimum flow to under 200 million gallons for over 200 days?—We have not reduced the minimum flow below 200 millions at all.

19,357. You have reduced it to 200?—To 200.

19,358. And if it happens to be less, it will be less?—Yes, if it happens to be. We do not reduce it to anything below 200 millions.

19,359. If you do not take the water, of course, that would not be reduced in anything like the proportion—in fact, it would not be reduced at all—

(Mr. Pember.) We take the water in flood time.

(Chairman.) They take none when it is reduced to that.

19,360. (Sir John Dorington.) Then you are not to take any water unless there is 200 million gallons going over Teddington Weir?—That is so.

19,361. So that there will be always 200 millions; it is not a question of an average?—This year there were ten days when it was less.

19,362. (Sir John Dorington.) You had not got the storage reservoirs?—We should not replace those ten days. We only leave it to the natural flow of the river.

19,363. (Mr. Balfour Browne.) He would have taken out more probably, if he had got his storage reservoirs?—No.

(Sir John Dorington.) I understand, if he had got his storage reservoirs, he would never have taken any water when there was less than 200 going over the weir. Two hundred million gallons is always to go over the weir.

(Mr. Balfour Browne.) No; there is not always 200 to go over, because he does not make it up.

(Mr. Pope.) If it is there to go, it goes.

(Sir John Dorington.) He is not to take water, unless there is at least 200 million gallons going over, and the water he is to take is the excess beyond 200 millions.

(Witness.) That is so.

(Mr. Balfour Browne.) Supposing before the Staines Scheme there were 250 going over the Teddington Weir, he can take 50.

(Sir John Dorington.) At present he can.

(Mr. Balfour Browne.) Not at present, without the storage. When he gets his storage, then he can.

(Sir John Dorington.) I understand the project of the future is that there is always to be 200 millions going over.

(Witness.) No, because we do not touch the natural flow. If the natural flow is less than 200 millions, we do not touch it.

19,364. If the natural flow is less, you do not take it?—We do not take it.

19,365. You cannot help it if the natural flow is less than 200 millions, but in that case you cannot touch it; but if the natural flow is 210 millions, you may take ten millions and no more?—That is so.

(Mr. Pember.) We neither bring it up to 200 millions, nor do we ever take it below.

(Sir John Dorington.) Quite so.

19,366. (Mr. Balfour Browne.) If, on the other hand, you were compelled to bring it up to 200 million gallons, or any other larger figure, your storage reservoirs would have to be increased again?—The quantity is so small, it is almost negligible. It is only 96 million gallons.

19,367. Have you ever seen a storage reservoir in the Thames cleaned out?—I have not personally—no.

19,368. Is it not a fact that the filter beds require continually cleansing at frequent intervals?—Yes.

19,369. How often?—It depends upon the state of the river.

19,370. The fouler the state of the river, the more frequent the change, is that what you mean?—The more silt there is coming down on to them, naturally the more frequently.

19,371. That is what I call fouler, the silt brings down a lot of things with it?—Not necessarily.

19,372. Is it a fortnightly thing or three weeks?—I believe it is from a fortnight up to about 28 days.

19,373. If you take the raw river water, as you propose, into the reservoir, is that with a view of preventing the deposit in the filters?—Oh, dear, no. Our reservoirs are storage reservoirs. They have the

effect, of course, of allowing a certain amount of silt, which is carried in by the pumps, to settle in the reservoirs, but they are storage reservoirs and not subsiding reservoirs. We make them there for the purpose of supplying London when the Thames itself cannot afford the quantity.

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19,374. As I understand, you take the raw river water into these reservoirs?—Certainly.

19,375. And whether they are intended for subsidence or not, subsidence will take place in them?—Certainly.

19,376. Because, whenever you have slack water, the water deposits detritus and debris?—Certainly.

19,377. I think you stated somewhere—I am sorry to say I cannot lay my hand upon the reference—the amount of suspended matter that there would be in raw river water?—Taking it on the average of all the year, about two grains per gallon.

19,378. Are you aware that in Loch Katrine water, which is, I think, rather purer than the Thames, it is from 2.1 to 2.6 in 100,000 parts?—I daresay. There is a very large amount of peat in Loch Katrine water.

(Chairman.) 2.6 in 100,000 parts.

19,379. (Mr. Balfour Browne.) The gallon is 70,000, is it not?—70,000.

19,380. You have given it in 70,000th parts?—Yes.

19,381. I have given it in 100,000th parts?—Yes.

19,382. And you have given it at a time when it is never taken, because you have taken it on an average? Yes.

19,383. Will you tell me what it is at the maximum?—At the maximum, I daresay it might be three times as much—three, or even four times, as much.

19,384. Are you aware that Sir Edward Frankland stated that the unfiltered water of the Thames at the Grand Junction intake at Hampton contained 32.8 total solids in parts per 100,000?—I think that is a question you had better put to the chemist, because that 32 parts does not mean stuff that would deposit in reservoirs at all.

19,385. It is total solids?—It may be total solids; but it is not total solids that will be deposited in a reservoir.

19,386. (Chairman.) Do you mean solids in solution, or what?—Some in solution—not in suspension.

19,387. (Mr. Balfour Browne.) Those solids in solution which would not deposit would be represented by the degrees of hardness to some extent, would not they?—To some extent, yes.

19,388. If I take off the degrees of hardness from that, which is 12.8, from 32.8, it still leaves a good deal more than six?—12.8 is not, I think, the ordinary degree of hardness. The ordinary degree of hardness is about 17.

19,389. Of Thames water?—Yes, about 17. There is the permanent hardness and the temporary hardness.

19,390. Are you aware that these are Sir Edward Frankland's figures at that time?—They may be, I daresay; but I do not think it is worth while considering them, because I know that has no bearing upon the particular question I am laying down.

19,391. I daresay you may know it. I know differently. You are calculating when you come to your scheme that the bottom water will be as good as the top water, and that your reservoirs will not require cleansing?—That is perfectly true and perfectly accurate.

(Mr. Pope.) If you want Sir Edward Frankland's testimony, you should call him. You cannot get his evidence in in this way.

(Mr. Balfour Browne.) I am only asking this gentleman what he calculates upon as solids.

(Mr. Pope.) He neither vouches nor disavows Sir Edward Frankland's figures.

19,392. (Mr. Balfour Browne.) You tell me you have never seen one of the reservoirs of the Thames which has been cleaned out?—I have never seen one at the time that it was cleaned out.

19,393. Is it an expensive matter cleaning out a reservoir?—Undoubtedly it is an expensive business if it has to be cleaned out.

Mr. R. E. Middleton. 19,394. Has it to be done by men with barrows, carting the stuff away?—I do not think that is absolutely necessary.

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19,395. How is it done?—I should think probably it is done like that, because it is done so exceedingly seldom—so very seldom.

19,396. Yet you cannot tell me how often it is done, can you?—I can give you four cases in which it has been done: 19 years, 18 years, 12 years, and 23 years. These are four cases that I know of. I did not see any of them.

(*Chairman.*) I suppose the companies can tell us to a nicety how often their reservoirs have been cleaned out.

(*Mr. Pember.*) Yes?

(*Chairman.*) And what amount of stuff came on each occasion?

(*Mr. Pember.*) Yes.

(*Witness.*) The two things are not in the slightest degree comparable, because we have not to fill our reservoirs every three days as they have. We only fill it about once a year—perhaps not so much. Therefore, the quantity of deposit is not to be compared in the one case with the other.

19,397. (*Chairman.*) When you say "we" you mean the Staines Reservoirs?—The Staines Reservoirs I am referring to.

19,398. (*Mr. Balfour Browne.*) Do you agree with this—speaking of Thames Ditton—"The water " was gradually drawn off and used for supplying down " to a point when it was found to be too turbid for " this purpose." This occurred when there were 4 feet vertical depth of water left in the reservoir. It became too turbid then for supply?—There is no comparison whatever between a little tiny reservoir like that and the Staines Reservoir.

19,399. Why not?—Because you have to draw them down a foot at a time. In the Staines Reservoirs it is a mere question of drawing down by inches, and, therefore, the settlement would take place gradually, and be at a very much lower level in the Staines Reservoirs than it would be in the other.

19,400. It seems to me to be the very reverse. If you have a little reservoir, and draw it down a foot at a time, you would have a very rapid flow out of the reservoir, and it would carry away some of the flocculent matter. If, on the other hand, you draw very slowly, and from the top, that would allow the flocculent matter to settle, would it not?—If you draw from a small reservoir from the top, of course, the flocculent matter would not be carried off.

19,401. It depends upon how little you draw. If you draw from a small vessel a great quantity, it stirs up all the silt, does it not?—When it became turbid, it would do so. If you were drawing from the top, it would not make the bottom turbid.

(*Mr. Pember.*) Here is one reservoir which may assist your mind for a moment. The reservoir of the West Middlesex, six acres in extent.

(*Mr. Balfour Browne.*) But we must not have evidence in this way.

(*Mr. Pember.*) I am merely answering the question of the noble Lord—six acres in extent, 16 feet deep, and it was cleaned out after a period of 30 years, and seven inches of deposit was found at the bottom.

(*Mr. Balfour Browne.*) Is that your evidence?

(*Mr. Pember.*) Yes.

19,402. (*Mr. Balfour Browne.*) I object entirely. I will put in something on the other side. "As the " liquid part of the lowest four feet in depth was got " rid of, there remained"—this is in the Thames Ditton Reservoir—"a mass of mud, weeds, and dead fish, " indiscriminately mixed up together." Do you think you would draw all that bottom water?—I do not know whose evidence that is.

(*Mr. Balfour Browne.*) It was Mr. Taylor's.

(*Chairman.*) Then really we must have Mr. Taylor.

(*Mr. Pember.*) Of course, I was going to call this gentleman whose evidence I read a moment ago, or I should not have read what he said. I am going to call him.

(*Mr. Balfour Browne.*) I will cross-examine the other gentleman.

(*Witness.*) You will not find that in the Staines Reservoir anyhow.

19,403. (*Mr. Balfour Browne.*) I do not know. Do fish never die in the Staines Reservoirs?—I do not know. We have not finished them. They will not have a chance of dying there, I think. There will be too much water left in them.

(*Mr. Pember.*) Of course, Mr. Taylor has long since ceased his connexion with London water.

19,404. (*Mr. Balfour Browne.*) I suppose so. (*To the Witness.*) Now, if you will turn to page 478 of the Appendix to Lord Balfour's Commission, and look at Messrs. Hunter and Fraser's estimate in the second column, I think you will find the total they estimated was 9,702,675*l.*?—Yes.

19,405. That was an estimate for 300 million gallons a day?—Yes.

19,406. And a minimum flow, as we have called it, of 200 millions. Do you agree with those figures?—I do not know. I have not considered them in the slightest degree.

19,407. Do you agree with the figure of 1,212,300*l.* higher up, which they put down for pumping power—the second item in their estimate?—No, I do not for 300 millions.

19,408. However, I see the total capital cost, according to them, of 26,940 horse-power to pump water into districts in 1941 at 45*l.* with buildings is 1,212,300*l.* Then there is another figure in their estimate which I want you to look at—the capitalised sum of 4,174,800*l.*?—I see that figure.

19,409. That is 139,160*l.* capitalised at 30 years' purchase. Do you agree with that?—No.

19,410. Under your estimate, which is called Estimate 24—I suppose that is what you have been looking at?—What is the estimate?

19,411. If you will look at Estimate 24, handed in at Question 18,419, your net storage for 300 millions is 29,602 million gallons?—Yes.

19,412. As compared with Messrs. Hunter and Fraser's figure of 18,000 million gallons?—Yes.

19,413. A difference, therefore, of storage between you and them of 11,602 million gallons?—That is so. That is due to the droughts of 1893 and 1898, of which they had no experience.

19,414. And of course you have to store more?—It is shown here that we have to store more.

19,415. 29,000 millions?—29,602 millions.

19,416. As against 18,000 millions?—Yes.

19,417. And a difference of 11,602 million gallons storage?—Yes.

19,418. And yet, notwithstanding that enormous difference, your estimate for the total quantity is 8,618,000*l.*, while there is, according to that table that I have shown you already, 9,702,000*l.*?—Yes.

19,419. Now, under the Staines Acts, 1896 and 1898—the two Acts—the total authorised storage was 3,284 million gallons?—Yes, 3,300 millions, as nearly as we can make it.

19,420. I thought it was 3,284 millions?—It has been variously given—I think you may take it at 3,300 millions.

19,421. It will not make any difference for that calculation, I daresay. And the capital amount was 1,250,000*l.*?—Yes.

19,422. Dividing the one by the other brings out 380*l.* for the storing per million gallons?—Yes.

19,423. And that, of course, is entirely independent of the use you may make of the reservoirs, or the quantity of water that you withdraw out of them; it is merely the cost divided by the capacity?—That is perfectly true, but it has no particular bearing on the cost of the works necessary for a given supply.

19,424. I am guarding against that. I am merely dividing the cost by the capacity; and on your own figures for those two years it would work out at 380*l.* per million gallons storage capacity?—That is so.

19,425. Under the Act of 1896, you obtained power to construct reservoirs and works for 2,529 million gallons?—Yes.

19,426. And the cost then was a million?—Yes.

19,427. And that worked out at 391*l.* per million gallons, is not that so?—Yes.

19,428. Now, in your Estimate 24, you put down 5,778,310*l.* for 29,612 million gallons?—Yes.

19,429. Or instead of 380*l.* or 391*l.*, only 195*l.* per million gallons stored?—That is so.

19,430. (*Chairman.*) You assent to all this; can you give any explanation as you go on?—I have given the explanation to you already, my Lord, that these are figures taken from our own estimates, and that the reason of the difference, first of all, is that in future reservoirs we shall take away the mid-feather bank, which means a cost of a large amount; that our aqueducts are made for a very much larger capacity than the amount we are allowed to withdraw, and that the land is obtained for four aqueducts instead of one. All these matters, of course, reduce the cost of future reservoirs very considerably.

(*Mr. Balfour Browne.*) We will deal with similar considerations when we come to the Welsh Scheme. But that is simple arithmetic, and it works out as you have said at 195*l.* per million gallons.

(*Chairman.*) It is not simple arithmetic, Mr. Balfour Browne. This explanation is that the 380*l.* and 391*l.* cover the cost of an aqueduct four times too large, whereas the next reservoir will have no aqueduct cost at all.

(*Witness.*) Yes.

(*Chairman.*) Therefore, it is not simple arithmetic, it is arithmetic with an explanation.

(*Mr. Pember.*) And they take away the mid-feather bank.

(*Chairman.*) Yes.

19,431. (*Mr. Balfour Browne.*) Have you got your aqueduct large enough for the whole of the storage; is it not the fact that you have to make it three times as large in the future?—Three times as large; but it is already nearly three times as large as we are allowed to supply.

19,432. Therefore, out of the figure which you have put in—the larger figures 380*l.*—you have not provided all that is necessary for the future aqueduct?—We have provided land for all that is necessary, but not works for all that is necessary. The works are enough for more than twice the present quantity.

19,433. Tell me what is the amount of land necessary for one aqueduct as compared with two or three?—A very considerable amount of difference.

19,434. Can you give me the acreage?—The one aqueduct, taking it over all, is about 15 feet wide—20 feet, say—and we are taking 70 feet of land.

19,435. Is it not the fact that in the first taking you would have to pay all the severance damage for the second taking?—That does not make any difference in the fact that we have got the money spent for the future—that we have not to pay it over again.

19,436. It would mean that there was no severance on the second at all?—We have not got to pay for severance over again, or for land over again. We have got the land for the future, and therefore we have not to pay for it over again.

(*Mr. Pember.*) These two items are taken out—severance and land.

19,437. (*Mr. Balfour Browne.*) You have got a severance to pay for, whether you take any more or not?—We have paid for it.

19,438. (*Chairman.*) The severance is included in the 380*l.*?—Yes.

19,439. (*Mr. Balfour Browne.*) But, as you have said, beyond that for land, you have to make the works?—We have to make some of the works.

19,440. Do you mean to say that the mere difference of land would cause a difference of from 380*l.* per million down to 195*l.*?—I did not say the difference in land would.

19,441. What then?—I said the difference in works. The present works will carry in one case 150 million gallons, and in the other case 90 million gallons, and the quantity we can take down the one is 100 million gallons and the quantity we can take down the other is 35. Then our pumping machinery is considerably in excess of present requirements, and the pumping

mains are also 50 per cent. in excess of the present requirements. Then we take out the mid-feather bank in the reservoirs, and that reduces the cost of future reservoirs very considerably besides.

19,442. How do you account for this, that Messrs. Hunter and Fraser, for only 18,000 million gallons with the necessary pumping power, put down 5,391,000*l.*, while you for much larger storage, 29,602 million gallons, only put down 5,778,000*l.*?—Yes; I can explain it quite easily.

19,443. Please do?—In the original reservoirs, as designed by Messrs. Hunter and Fraser, it was proposed to excavate below the ground to a distance of from 10 to 11 feet—to take so much of that as was required for making the banks into bank and to run the rest to spoil. When the present reservoirs were designed, it was seen at once that this was a most wasteful form of construction—that to do it would mean the throwing away of at least 400,000*l.* on each reservoir, and the construction was abandoned. The amount of excavation is limited strictly to the amount that is required to make the banks, and no more, and the water is all pumped into the reservoirs and all allowed to flow out by gravitation.

19,444. It is a startling discrepancy of about 400,000*l.*, although you are to store 29,000 million gallons, while they were only going to store 18,000 million gallons?—It is, and you can easily grasp it; if you took out 6 feet more from the bottom of those present reservoirs, it would cost you over 300,000*l.* to do it, and you would have to pay for the land to put it on, and for the carrying it away besides.

19,445. (*Chairman.*) What was the object of Messrs. Hunter and Fraser in digging their reservoirs so deep?—Apparently the original idea was to fill them partly by gravitation, and they thought some advantage might be gained in that way, and they were taking it away by an underground channel of great depth, so that they could be filled into that channel, and which was to be pumped at the other end; so it appeared on the face of it rather clearly that they were to have some advantage by filling by gravitation. As a fact, there was no advantage gained at all.

19,446. Have you allowed for the extra pumping that your form of reservoir involves?—As a matter of fact, there was no extra pumping. It had to be pumped out if it was not pumped in.

19,447. (*Mr. Balfour Browne.*) Did they get greater capacity upon the same area?—If they raised their banks higher, of course, they got greater capacity.

19,448. And the very stuff they would have taken out of the bottom they would have used for the banks?—That is what we are doing.

19,449. But you are not going so deep?—We are not going so deep, because to do so is wasteful.

19,450. Then you condemn the scheme of Messrs. Hunter and Fraser which was approved by the Royal Commission, as I understand it?—No.

(*Chairman.*) The Royal Commission gave no opinion as to going to any particular depth.

(*Witness.*) They did not examine into the question of whether they were going to dig the reservoirs out or not.

19,451. (*Mr. Balfour Browne.*) I understood that it was upon that estimate it was approved of. Now let me take it upon your own figures. Of course, you differ, in every figure I put to you, from Messrs. Hunter and Fraser, with regard to cost of engines, and so on; but I am just going to take their figures. If it cost you 380*l.* per million gallons on your two Acts of 1896 and 1898 for your 29,000 million storage, that would be 11,248,760*l.*?—Yes, but it is not so. The figures I have given you are perfectly correct.

19,452. I am only taking what your own estimates were for your two Acts of Parliament. I then add to them from Messrs. Hunter and Fraser's cost of engines to pump into district, 1,212,300*l.*, and also their figure, the capitalised sum of 4,174,800*l.*?

(*Major-General Scott.*) Capitalised for what?

(*Mr. Balfour Browne.*) This is the 139,000*l.*—the cost. This is capitalised at 30 years' purchase.

(*Chairman.*) Cost of pumping, I suppose?

(*Mr. Balfour Browne.*) It is the capitalised cost of pumping into the district.

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(Major-General Scott.) Four million pounds odd.

19,453. (Mr. Balfour Browne.) 4,174,000*l.* It is all upon page 478 of the Appendix. (To the Witness.) There is only one other figure in that estimate—136,440*l.* If I add those four figures together, I get, upon the basis I admit of the 380*l.*, 16,722,300*l.* for the Staines reservoirs complete?—Yes.

19,454. (Chairman.) Is there any difference in the amount allotted for pumping, or in the capitalisation of the pumping in Messrs. Hunter and Fraser's estimate?—Yes, the amount of horse-power is considerably different. They have gone on annual pumping charges of 256 million gallons a day. Of course, my figure is not for 256 million gallons a day; it is the excess over 130 million gallons a day, and that is therefore only 170 million gallons a day. This Estimate 24 is only for a capacity of 114½ million gallons, and the cost of that is 3,152,442*l.*, the total expenditure on capital and lands, &c., for works, annual pumping charges of 256 million gallons a day. The two estimates are not comparable in any way.

(Mr. Balfour Browne.) You vary from their estimate of the Staines Scheme.

(Chairman.) Not a bit.

(Witness.) Not at all.

(Chairman.) He only says that Messrs. Hunter and Fraser's estimate, which you have been reading from, applies to a different quantity of water.

(Mr. Balfour Browne.) It applies to storing the less quantity of water, because it was only 18 thousand millions and he is going to store 29 thousand millions.

(Witness.) That is perfectly true, of course, but the supply is a very much less one.

19,455. Do you mean to say you are going to give a less supply than they were?—No, it says "annual pumping charges of 256 million gallons." Now, my annual pumping charges on this estimate are for only 114½ millions.

19,456. How are you going to pump less? This is annual pumping into the district, is it not?—Into the district. We have got to do the 185½ millions. That is to be done somehow.

19,457. (Chairman.) That is another estimate?—That is another estimate—a perfectly different estimate.

(Chairman.) We have separated all through the cost of storing enough to supply 185½ million gallons a day and the cost of storing anything beyond that up to 300 million gallons.

(Mr. Balfour Browne.) The 185½ million gallons is made up with the help of 35 millions [from this very Staines reservoir.

(Mr. Pember.) Yes, it is common to both schemes.

(Mr. Balfour Browne.) I dare say it is, but it ought to be included in the cost of the Staines Scheme.

(Witness.) No, it should not.

(Mr. Balfour Browne.) Is not the 185½ million gallons made up of 130 million gallons, 20½ million gallons, and the 35 millions?

(Chairman.) Yes, but you were reading from Estimate 23.

(Mr. Balfour Browne.) Yes.

(Chairman.) Estimate 23 is the cost of supplying 114½ million gallons; that is, it is the extra cost of providing and filling reservoirs which will help to supply the balance between the present 185½ million gallons and the 300 million gallons which are ultimately contemplated.

(Major-General Scott.) It was got out to make a comparison between the first instalment from Wales and that particular instalment from the Staines reservoir.

(Mr. Pember.) Yes.

(Witness.) Yes.

(Chairman.) Therefore, it is no use to compare it with an estimate of Messrs. Hunter and Fraser's, which was for a different quantity of water, and a different style of work.

(Mr. Balfour Browne.) I think you can compare it with Estimate 24. In Estimate 24 Mr. Middleton gives the cost of supplying 300 million gallons. There the total cost comes out at 8,060,569*l.*

(Chairman.) But that is not Estimate 24.

(Mr. Balfour Browne.) Yes.

(Chairman.) No, Estimate 24 is for supplying from the Thames 114½ million gallons a day.

(Mr. Balfour Browne.) Yes, but in the first money column of that you will find the cost of supplying 300 million gallons and at the bottom of that column you will find the cost comes out at 8,060,569*l.* Then he adds pumping machinery for distribution to that, bringing out 8,618,029*l.*

(Chairman.) Yes, but if you look at his cost of pumping there, it is cost of pumping to supply a quantity increasing from nil up to 170 million gallons a day.

(Mr. Pember.) You see, Mr. Browne, if you take the middle column away from the first, you get the third. That is the point.

(Mr. Balfour Browne.) I daresay; but the first is what I was dealing with—the 300 million gallons a day.

(Witness.) It does not compare with Messrs. Hunter and Fraser's at all, because theirs is for the pumping of 256 million gallons.

(Chairman.) This is for the pumping of 300,000,000 gallons.

(Witness.) Mine is from nil to 170 million gallons. It says so distinctly: "cost of pumping to supply a quantity increasing from nil to 170 million gallons per day, at 2*½* *l.* per million gallons."

(Chairman.) This assumes that the cost of supply and proper storage for the present authorised supply of 130 million gallons a day is otherwise dealt with and disposed of. That belongs to the past; this is the future, the future beyond the 130 million gallons. Therefore, it will only be pumping for 130 million gallons.

(Mr. Pember.) Yes.

19,458. (Major-General Scott.) I do not quite understand this estimate, Mr. Middleton, because I see that you have got three columns. One is the cost of supplying 300 million gallons, which you have imported from Estimate 10?—Yes.

19,459. The next column is the cost of supplying 185½ million gallons, which you have imported from Estimate 2?—Yes.

19,460. And the third column is the difference between those two?—Yes.

19,461. But then, when you refer to this pumping, are you alluding to the third column, or what?—At the present moment I am alluding to the first column.

19,462. When you say from nil to 170 million gallons?—That is the first. You will see it is only carried out from the first. The second one is from nil to 55½ million gallons, and the third one is from 55½ millions to 170 million gallons.

(Mr. Pember.) 114 millions.

(Chairman.) It requires a small treatise to explain every line of these estimates.

(Witness.) You see, Major-General Scott, in the figures of charge, the cost is put opposite to the line, and the line refers to the particular item.

19,463. (Major-General Scott.) Why do not you make a charge for the 300 millions with reference to the first column?—For the 300 millions or for the 170 millions?

19,464. For the pumping of the 300 millions?—Because that is already incurred.

19,465. (Chairman.) Not the cost of pumping?—The cost of pumping 130 million gallons is already incurred, all the machinery of it being authorised already and incurred.

19,466. This is not the cost of getting pumping machinery, but the cost of actual pumping?—It is the cost of pumping between 130 and 300 million gallons. The cost of the 130 is already incurred. At any rate, if you were to add it on, it would be merely adding on the same figure to the two columns and the third column would be the same. There would be no difference whatever.

19,467. (Major-General Scott.) That would have been simpler; it would have been more easily understood, I think, because when one reads the heading of the first column, it states it is the cost of supplying 300 million gallons?—So it is.

(Chairman.) No.

19,468. (Major-General Scott.) If you look at the pumping, you will see it is not the cost of 300 millions—it is the cost of pumping from nil to 170 million gallons. In fact, you have excluded that from all three?—It says, "Estimate showing by method of deduction the cost of supplying 114½ million gallons per day, from the Thames (in addition to the take of 114½ million gallons per day already authorised) under the conditions of 1898, compared with Sir A. Binnie's estimate for the same amount under the conditions of 1893."

19,469. (Mr. Mellor.) Then the heading of the column is wrong, surely?—No, the heading of the column is perfectly correct.

(Chairman.) No.

(Mr. Balfour Browne.) Surely.

(Witness.) You mean the column headed "Cost of supplying 300 millions" is wrong?

19,470. (Mr. Mellor.) Yes?—If you take it in that way, it is wrong, certainly.

19,471. (Mr. Balfour Browne.) Let me take that just one step further. I understand that the cost of pumping up to 170 million gallons is 5,173,794l. ?—The cost of storage.

(Chairman.) No, the cost of pumping.

19,472. (Mr. Balfour Browne.) The cost of pumping. It is in your first column which you have just been explaining?—What sum did you say?

19,473. 5,173,794l. ?—No, two millions.

19,474. (Mr. Pember.) You are looking at a different thing, I think. Have you got Estimate 24?—If you have "5" it should be "2" millions.

19,475. (Mr. Balfour Browne.) I was going to ask how on earth it could cost that for pumping a less quantity of water than could be pumped by Messrs. Hunter and Fraser's estimate.

19,476. (Chairman.) It is "2" in Estimate 23?—Yes.

19,477. No, Mr. Browne has got Estimate 24 before him?—It is the same thing—the figure is exactly the same, or it should be exactly the same in the two.

19,478. (Mr. Balfour Browne.) Comparing your Estimate 23, which deals with the conditions of 1893, with your table of storage for 300 million gallons a day, it is shown there as 21,725 million gallons?—Yes.

19,479. And in your Estimate 24, that we have just been dealing with, where you deal with the circumstances of 1898, your total storage is 30,468 million gallons?—Yes.

19,480-1. Showing that upon the condition of those two years you have had to increase the storage 8,743 million gallons?—Yes.

19,482. (Mr. Balfour Browne.) I see on Estimate 23, which purports to compare your storage of 21,725 millions with Sir Alexander Binnie's on the other side of 28,000 millions, the difference between those two is 6,275 million gallons?—Yes.

19,483. I believe that the difference on that year 1893 is more than accounted for by Sir Alexander Binnie proposing to provide 4,000 million gallons for cleaning, and 4,000 million gallons for bottom capacity?—Yes, that is so.

19,484. If those had to be provided, there would be practically little or no difference between the estimates?—Yes.

19,485. (Mr. Pember.) There would be something still, would not there, between the question of the number of reservoirs you constructed and their sizes?—There might be.

19,486. (Chairman.) And the price per million gallons?—And the price per million gallons.

(Mr. Balfour Browne.) I was not upon the figures at all, except as far as storage capacity is concerned, and the only difference is in those two items, I think.

(Mr. Pember.) Yes.

19,487. (Mr. Balfour Browne.) Before leaving those estimates, I am correct in saying, am I not, that as to this Estimate 2, for 185½ million gallons, your storage upon the conditions of 1898 would have to be 13,719 million gallons?—Less the existing capacity, 12,853 millions.

19,488. Of course, that is the total capacity?—Yes, that is so.

19,489. Your storage for the same quantity, 185½ million gallons, under Estimate 1, is 5,239 million gallons?—That is so.

19,490. The only difference there is that in the latter, where you get 13,719 millions, that is under the conditions of 1898?—Yes.

19,491. Whereas the 5,239 millions is on the conditions of 1893, and the difference between those two is 8,480 million gallons?—Yes.

19,492. (Chairman.) I had not noticed it before, but will you tell me why, for the very same work, namely, supplying storage for 185½ million gallons, you reckoned the cost at 300l. per million gallons in Estimate 1, and only at 204½l. per million gallons in Estimate 2?—Because all you have to do is to make further reservoirs; there are no other works. The pumping machinery is the same.

19,493. But that applies to Estimate 1?—No. You have got all the works to make for this quantity—you have an aqueduct to make, and you have pumping machinery to build, and houses to build for it.

19,494. But forgive me—in both those Estimates, 1 and 2, there is the estimated capacity for the future, less the existing capacity, leaving a balance which has to be provided?—Certainly; that is perfectly right.

19,495. It is exactly the same?—No; because the cost of those works is the same in the two cases.

19,496. It is not. It is 300l. in one case and 204½l. in the other?—It is the same in both cases for those works. All that you have to add is for storage reservoirs, and the storage reservoirs do not cost 300l., or anything like it.

19,497. Then why have you assumed them at 300l. in Estimate 1?—Because 300l. includes aqueduct and storage reservoirs, and pumping machinery and land, and everything, in both cases.

19,498. I beg your pardon; there is no item—

(Major-General Scott.) You want some other reservoirs?—Only reservoirs—you have to add no other works.

19,499. (Mr. De Bock Porter.) The additional reservoirs are taken at a lower rate?—At a much lower rate.

19,500. (Mr. Balfour Browne.) But in Estimate 9; I find that when you are putting in much larger storage reservoirs, it comes up again to 212l. ?—That is so.

19,501. It goes up from 204½l., which Lord Llandaff was asking about, up to 212l. per million gallons?—That is perfectly correct.

(Mr. Balfour Browne.) It may be perfectly correct, but it seems to me very extraordinary.

(Chairman.) It is not very intelligible.

(Mr. Pember.) I cannot but think there must be something wrong in the transcription of these Estimates 1 and 2.

(Mr. Balfour Browne.) I noticed it when they were put in—they may be wrong.

19,502. (Mr. Pember.) Perhaps you would not mind telling us, Mr. Middleton, as to both those Estimates 1 and 2—the comparison between Sir Alexander Binnie and you is one on the conditions of 1898 and the other on the conditions of 1893?—My Estimate 1 is on 1893 and 2 is on 1898.

19,503. (Chairman.) The effect of the difference between 1898 and 1893 is to increase the storage required from 5,239 million gallons to 13,719 million gallons?—Yes.

(Chairman.) One quite understands, therefore, that the number of gallons is largely increased, but inasmuch as it is exactly the same work for exactly the same ultimate supply, I cannot understand why the cost per million gallons is to be much less in one case than in the other.

(Mr. Pember.) I think I can tell you that very easily, my Lord. Supposing you had to meet the conditions of the year 1893 for the land and for conduits and pumping machinery, and all that sort of thing, you would have to do exactly the same work which you have to do for the conditions of the year 1898.

(Chairman.) No.

(Mr. Pember.) Yes.

(Chairman.) No, because you do not want so much land for storing 5,000 millions.

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Mr. R. E. Middleton. (Mr. Pember.) No, not so much land except the land for the reservoirs, and there is so much more taken off the cost in adapting the thing to 1898 that it comes out less per million gallons.

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(Chairman.) I see.

(Mr. Pember.) You have got nothing to do, in fact, but to add storage reservoirs in the other.

(Witness.) That is all.

(Mr. Balfour Browne.) May I say that I do not think that explanation will do, because if you go from Estimate 2, where you have been looking, to Estimate 9, you will find that he increases the capacity again.

(Mr. De Bock Porter.) It goes up again.

(Mr. Balfour Browne.) It is increased to 21,725 millions now, and it works out at 212l. per million gallons.

(Witness.) Perfectly true, but then you have also to increase your supply. The one is the supply for 185½ million gallons and the other is the supply for 300 million gallons. Therefore, you have to put in the pumping machinery, the mains, the aqueducts, and so on, for the larger supply. That is the explanation.

(Mr. Pember.) That is exactly the point between Estimates 1 and 2. There is no difference between the amount of water supplied, 185½ million gallons, but when you come to Estimate 9, you have got there a supply of 300 million gallons instead of 185½ million gallons, so that it means a larger aqueduct.

(Mr. Balfour Browne.) If the increase of supply accounts for it in any way, why, when you have increased the supply on Estimate 10 to 300 million gallons for storage, does it come down to 195l. per million gallons?

19,504. (Mr. Pember.) The same reason?—Exactly the same reason as before. The additional work is for storage alone. You have got nothing but for storage. There are no aqueducts, no engines, and no other works to be constructed.

19,505. (Mr. Balfour Browne.) I do not see why it is supply in the one case and storage in the other?—The two sums are for the same amount. They are both for 300 million gallons. That is the reason. In the one case it is 300 millions, and 185½ millions in the other.

19,506. Upon those two estimates the difference of storage upon the two conditions of 1893 and 1898 was 8,480 million gallons?—Yes.

19,507. If I take that at 380l. per million gallons, the first figure upon your estimates of 1898 and 1896, that would make the Staines Scheme cost 3,222,400l. ?—But what on earth is the use of introducing a figure like that when this is for reservoirs alone?

19,508. What is for reservoirs alone?—The increased quantity is for reservoirs alone. It is not for increase in supply; the other is for reservoirs, for aqueducts, for and, for pumping machinery, for machinery for distribution, and for all sorts of items which are not included in that figure.

19,509. But do you mean to say there would be no more distribution of the 13,000 millions than of the 5,000 millions?—No, not a bit more. The distribution is exactly the same. There is no difference whatever. The only works that you have to add on are works for additional storage capacity—nothing in the world besides.

(Mr. Pember.) In the one case you want a bigger reservoir behind the same apparatus.

(Major-General Scott.) 13,000 millions is the quantity the reservoir would hold in the one case, but in the two cases the same quantity has to be delivered out of the reservoirs—the same quantity has to be pumped in and pumped out, and so on.

(Mr. Balfour Browne.) Not pumped in, with great respect.

(Major-General Scott.) Probably not pumped in.

(Mr. Balfour Browne.) If you have got a bigger vessel, you must pump more in.

(Major-General Scott.) Yes.

(Chairman.) Accordingly, the pumping is charged at so much per million gallons.

19,510. (Mr. Balfour Browne.) Does it vary in the two tables?—Undoubtedly.

19,511. Now you state at Question 14,424 that, from your sanctioned Staines reservoirs you can supply a much larger quantity than the limit of 35 million gallons?—Under the conditions of 1893, yes.

19,512. That 35 million gallons was limited by the Act of 1896, was it not?—It was limited by the Act of 1896.

19,513. If that is so, if you could do that, why did you, after the limit was imposed in 1896, go to increase the storage capacity from 2,520 millions up to 3,284 millions?—Because we could do the rest of the work for very nearly the same amount, and we found that what we thought was a great charge to begin with—the sewage farm—was very easily replaced. We were afraid that the Staines Urban District Council would oppose us on account of our wishing to get the sewage farm, and therefore we cut it out of our works, and we found afterwards we might obtain it on moderately easy terms, and we thought it distinctly desirable to increase our works to the best capacity that they could be made for the money.

19,514. But if you could get a greater capacity than the 35 million gallons out of the old works, why increase them by a thousand million gallons storage?—Because we distinctly expect that that is not the end of those works.

19,515. It is not for any immediate want?—If you had asked me that in the beginning of the year, I should have said no.

19,516. But this was before the beginning of the year?—Yes.

19,517. It was before you had the experience of 1898?—Certainly, with the experience of 1898 I should have distinctly said no. There was a very very large margin, but on the conditions of 1898, I cannot say the same thing.

19,517a. Now, a question on Question 8221. You say, if I rightly understand you, that Mr. Deacon's statement quoted by the Chairman in that question is incorrect. Just let me see what it is. It is a quotation.

(Chairman.) If you are going to pass to another matter now, this would be a convenient time to adjourn.

(Mr. Balfour Browne.) Yes, this is another matter.

(Chairman.) Have you many more matters to ask him about?

(Mr. Balfour Browne.) I have a good deal to ask him about his comparative estimates on the Welsh Scheme, and on the other.

(Mr. Pember.) Would it embarrass your Lordship if I ask you if you will sit two days next week?

(Chairman.) Yes, we shall sit two days next week Monday and Tuesday next.

19,518. (Mr. Lewis Coward.) Might I detain your Lordship one moment? When Mr. Morris, the engineer of the Kent Water Company, was giving evidence, a table showing the rainfall over a very long period was put in.

(Chairman.) Yes, I have it in my mind.

(Mr. Lewis Coward.) That table was compiled from evidence given by Mr. Hawksley before the Duke of Richmond's Commission, and from the Registrar-General's Returns. It was thought desirable that the Commission should have those figures verified, and that that rainfall return should be submitted to the Astronomer Royal. It was accordingly submitted to him, and he has made some corrections which, although they do not affect materially Mr. Morris's conclusions, may be material on the points upon which future witnesses may give their evidence, and, therefore, if your Lordship will allow me, I will put in a list of the corrections as made by the Astronomer Royal?

(Chairman.) Thank you, we shall be glad to have them. (The list of corrections to the table was handed in. See Appendix S, 1.)

[Adjourned to Monday next at 12 o'clock.]

See 16

Recal
Q. 19

FORTIETH-DAY.

Monday, December 12, 1898.

Guildhall, Westminster, S.W.

PRESENT :

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Honourable JOHN WILLIAM MELLOR, Q.O.,
M.P.
Sir JOHN EDWARD DORINGTON, Bart, M.P.
Sir GEORGE BARCLAY BRUCE, Kt., C.E.

ALFRED DE BOCK PORTER, Esq., C.B.
Major-General ALEXANDER DE COURCY SCOTT, R.E.
HENRY WILLIAM CRIPPS, Esq., Q.C.
ROBERT LEWIS, Esq., Q.C.

OECIL OWEN, Esq., *Secretary*.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

MR. REGINALD EMPSON MIDDLETON recalled.

19,519. (*Mr. Pember.*) Before my learned friend goes on with the cross-examination of Mr. Middleton, Mr. Middleton is anxious to give an explanation of the answer he made to Question 19,245. Perhaps you would kindly permit him to do that in his own way.

(*Mr. Balfour Browne.*) That has to do with the well at Orpington, has it not?

(*Witness.*) Yes.

19,519a. (*Chairman to Witness.*) Well, Mr. Middleton, please to give your explanation, and let us get on. The question was: "That was the total amount that they could calculate upon drawing, I think, according to the Balfour Commission. Are you aware that grave complaints have been made that in consequence even of that 18½ millions being taken, the streams are being dried up in Kent?" (*A.*) No, I was not aware of the fact; but, take the Orpington well, for instance; if I put a well right at the head of the stream it is probable that the stream below will be affected, and I have always said that it would." It would appear from that as if I was applying those words to the Orpington well, which is not the intention. They simply apply to the general principle that if a well is placed at the head of a stream, the stream below will be depleted thereby. I have not the slightest belief that the springs at the head of the Cray were depleted by the pumping of the Orpington well, which has been going on for years, and which, so far as not, to the best of my knowledge, depleted that stream. I might, perhaps, be allowed to say at the same time what is the effect of pumping in the bed of a stream, which can be found from the report, which was referred to the other day, of Mr. Cubitt in the case of the Grand Junction Company's well at Cow Roast. There there was a well placed almost in the bed of the stream—

(*Mr. Balfour Browne.*) You are going to give us somebody else's evidence, are you?

(*Witness.*) This is my own report on that evidence which was referred to the other day, Mr. Browne.

(*Mr. Balfour Browne.*) Is not that going a little beyond this explanation?

(*Witness.*) I do not think it is, it is certainly not intended to be so.

(*Mr. Pember.*) Surely, Mr. Browne, the real point is, is it something which can be of real assistance to the Commission?

(*Mr. Balfour Browne.*) I do not know how far we are to go.

(*Mr. Littler.*) I think, my Lord, I may say for the Kent Company it is very desirable that the correct facts should be laid before the Commission.

19,520. (*Mr. Balfour Browne.*) Are these facts with regard to the Orpington well?—They are not, they are parallel facts.

(*Mr. Balfour Browne.*) The question, of course, is whether you can draw any inference from them, but if it is short you shall read what you like. I do not think it will affect it. Where are you reading from?

(*Witness.*) I am reading from page 548 of the Appendix to the Minutes of Evidence of Lord Balfour's Commission. The Grand Junction Company—that is to say, the Canal Company—have a well at Cow Roast which is 75 feet deep, the level of the bottom being about 318 feet above Ordnance datum. It was stated that the river below that well was depleted by the pumping from that well, and there was a trial in consequence, and Mr. Cubitt was ordered to report on the circumstances. The drainage area above the well is about 2,000 acres, and given 10 inches of rainfall on that area as being available, it would give a daily supply of about 1,200,000 gallons. The capacity of the pumps during the first experiment of 10 days continuous pumping from June 27th to July 7th, 1849, was 1,231,000 gallons per diem, and the level of the water in the well was lowered about 60 feet. Three gauges were fixed.

19,520a. (*Mr. Balfour Browne.*) I really do not follow where you are reading?—It is in the second column, page 548; Three gauges were fixed for the measurement of the flow of the river. On June 25, when the canal was empty, the first gauge discharged three-quarters of a gallon per minute, the second 16 gallons, and the third 266 gallons. When the canal was filled, the first gauge discharged 5 gallons per minute, the second 33 gallons per minute, and the third 322 gallons per minute, showing there was a large amount of leakage from the canal into the river.

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Mr. R. E. Middleton. (Mr. De Bock Porter.) This is rather wide, is it not.
(Chairman.) I must say I cannot follow this, Mr. Middleton.

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(Witness.) One moment more, I will not keep you one minute, my Lord; again, on the 8th July, after 2444 hours continuous pumping, the second gauge ran dry, while the third one was discharging only 237 gallons per minute; thus, while 11,160,000 gallons had been pumped from the well, the second gauge had lost 218,000 gallons, and the third gauge 562,000 gallons. Then a further experiment showed that after 12,312,000 gallons had been pumped, the loss to the stream was temporarily 109,440 gallons per day, and the total loss was 1,100,000 gallons, or less than one-tenth of the quantity pumped. So that the effect of that pumping almost in the bed of the stream with an area behind it less than sufficient to supply the quantity pumped was only to deplete the stream to the extent of 1,100,000 out of 12,312,000 gallons pumped, or one-tenth.

(Mr. Balfour Browne.) That seems to me inconsistent with the statement you made just now, namely, that pumping would deplete.

(Witness.) No, it is not inconsistent. It does deplete, and I only want to show to how small an extent it does deplete it.

(Mr. B. A. Reid.) May I interpose for one moment? That is an experiment which took place in Hertfordshire. We cannot admit for a moment the accuracy of these statements without investigating them. The original report I have in my office, but not here.

(Chairman.) Very well.

(Mr. Balfour Browne.) It took place, I see, in 1849.

(Chairman.) Let us get on, please.

Further cross-examined by Mr. BALFOUR BROWNE.

19,521. I go back just to ask you a question about this Orpington well. What you said was, you were not aware of the complaint that the pumping had dried the streams in Kent; then you gave an illustration—"but take the Orpington well, for instance; if I put a well right at the head of the stream, it is probable that the stream below will be affected, and I have always said that it would"—that is still true?—Yes, I have always said that a stream would be affected.

19,522. Is that—I ask you the next question—is that what they have done?—That is what they have done in the case of the —

19,523. The Orpington well?—That is to say, there is a well there which is above the head of a stream.

19,524. Above the head of a stream?—Yes, about a mile above the head of a stream.

19,525. It seems obvious that if you go and put a well down above the head of a stream, you will probably take water from that stream?—Certainly.

(Mr. Balfour Browne.) I am very sorry to say I do not quite understand the correction.

(Chairman.) The correction only is that it will be a very small quantity.

(Witness.) Yes, that is so.

19,526. (Mr. Balfour Browne.) And you have no means of knowing to what extent it has taken place in the case of Orpington?—I have no means of knowing.

19,527. It would require very delicate gauging, I suppose, before the well was sunk, and afterwards?—Yes, and a careful investigation of the rainfall statistics —

19,528. During the particular years affected —? —Which show that for the last 15 years there has been a very much less rainfall than in the previous 18 years —nearly 34 inches less on the average—which will entirely account for any depletion of the rivers and wells which we have heard so much about. On that return of the rainfall that was put in at Question 16,797 —

19,529. That return only refers to the rainfall of Greenwich?—Yes, certainly.

19,530. Are you aware that the rainfall which is shown there to be 14.75 inches was lower at Greenwich than at any other place further to the west?—I should think it was probable, but the proportion would probably remain the same.

19,531. Unless we had a series of the results of rain gauging up the whole valley of the Thames, we could

not exactly say whether this year compared favourably or unfavourably with other years in your series?—You see that Orpington is a place which is very near—it is not very far from Greenwich.

19,532. I am not dealing with Orpington now—I am dealing with the table generally. Are you aware that, taking 1893 on that very table of your own that you put in, there are 14 cases in the last 84 years that are worse than 1893?—I am not.

19,533. Or as bad?—I am not.

19,534. You are not?—But that is not the point that I was dealing with. The point is, that during the last 15 years the rainfall, as measured at Greenwich, was only 22.25 inches, while for the previous 18 years it was 26.03 inches, or 3.78 inches more, and that that is sufficient to account for a very large amount of depletion in rivers and streams and springs.

19,535. And also in the chalk itself?—Well, that is the same thing, is it not?

19,536. I agree; it is the same thing, although you did not say so in Hertfordshire. Now, I was asking you about a question and answer that you gave in reference to what Mr. Deacon had stated. You remember Mr. Deacon stated at Question 8,221: "Apart altogether from the merits or demerits of the Staines project for the supply of any specific quantity of water, it is important to observe the very high ratio in which the necessary storage increases with the supply," and he went on to point out, that if you increased the supply from 200 million to 300 million gallons a day—that is to say, nearly 50 per cent. increase—the storage had to be increased 180 per cent., and if you increased it from 200 millions to 400 millions—that is to say, an increase of 100 per cent.—the storage would have to be increased 420 per cent. Do you dissent from that?—Yes; I dissent from the rate of supply—the rate of supply as regards the storage does not appear to me to be correct.

19,537. Just let me see if I cannot prove that to be a moderate calculation from the Report of the Royal Commission. If you will look at page 482 of the Appendices, at the head of the column headed "Appendix C 67," you will find there, I think, first a table—Table No. 1—showing "Required for daily water supply"—that is one column—"Total minimum flow of the river," "storage required," and I see for 114 million gallons the storage required is 1,896 millions. I see that if you increase it to 184 million gallons, you have to increase the storage to 5,116 millions, or an increase, I think, of 170 per cent., while the 114 millions is increased to 184 millions, which is an increase of only 61 per cent.; is that not so?—That is not the question. I am not finding any fault with the ratio of storage.

19,538. Do you agree with that?—There is no doubt about that; that is perfectly right.

19,539. Just one more question on that. I will get the ratio of storage from this. When you increase it to 300 million gallons, the storage goes up to 17,526 millions, or an increase of the quantity of 160 per cent. from 114 millions?—Yes.

18,540. While the storage is increased 824 per cent.?—The storage from what?

19,541. The storage from 1,896 millions to 17,526 millions, that is 824 per cent., while you have only increased the supply by 160 per cent.—That is the question; is the increase of supply 160 per cent.?

19,542. I am only taking the figures from the column; the increase from 114 to 300 is 160 per cent.?—Yes; but first of all, I dispute the figure of 114.

19,543. This is Mr. Hunter's figure; you know?—Just so. The figure for 130 on the tables that we were going on at that time is only 1,802; but the question is as regards the supply, not as regards the storage. The supply of 130 millions, as I have taken it, requires a certain amount of storage under the conditions of 1898. Of that 130 millions, 23 millions a day have to be stored on the average of the year; that leaves 107 millions without the conditions of storage. Take 107 from 200 millions and it leaves 93 millions; take it from 300 millions and it leaves 193 millions. Therefore, the ratio of the supply is as 93 is to 193, or 207, I think that is.

19,544. May I call your attention to the fact that you said that you were quarrelling with Mr. Deacon's statement which I read to you, that it is important to

observe the very high ratio in which the necessary storage increases with the supply?—Yes.

19,545. Of course, if you quarrel with Mr. Hunter's figures, you must settle that with him?—No, I was quarrelling with the definition of supply. The definition of supply for storage purposes only begins at 107 on the worst year we have had at present, and does not begin at nothing.

19,546. The table says "required for daily water supply"?—Yes.

19,547. I should have thought that that meant exactly the same thing as Mr. Deacon; still, we will leave it so. Now, one or two questions with regard to your Staines Scheme. In Estimate 1 you give a calculation of cost in relation to the figures of 1893; of that money which you put down there first for reservoirs, will you tell me what you have put down for land?—No, I am afraid I could not tell you that straight off.

19,548. Can you tell me what you put down for excavation and banking?—No, I think we have not had these figures from you, and you can scarcely ask me what I make it on my figures.

19,549. Forgive me; this is your scheme I am questioning you about?—Certainly.

19,550. For the Thames supply?—These figures I can divide into reservoirs and other works if you like.

19,551. Aqueducts?—No, reservoirs and other works.

19,552. Pumping engines?—No, reservoirs and other works.

19,553. You cannot tell me, for instance, what you have put down for the aqueducts to convey 185½ million gallons a day?—Yes, I think you can find that on Estimate 14.

19,554. Estimate 14—that must be a long time ago?—The aqueduct is put down on Estimate 14 as costing 454,408l.

19,555. Is that to convey the 185½ million gallons?—No, that is another aqueduct. There is one aqueduct to convey a part of the 185, and then there is another aqueduct afterwards to convey a larger amount. These are calculated on the basis of the same aqueducts that we have at present.

19,556. Then that amount of money spent on an aqueduct would convey that amount of water?—Yes.

19,557. Can you tell me the dimensions of the fall?—The fall is $\frac{1}{100}$ of one foot per chain.

19,558. And the dimensions?—No, I could not tell you at the moment. The smaller aqueduct is about 10 feet wide at the top, with a batter of 5 to 1 at the sides, and with a depth of 6 feet 4 inches of water.

19,559. What is the length?—The length of the smaller aqueduct is just about six miles.

19,560. Is the smaller aqueduct capable of conveying 185½ million gallons?—No, it is an aqueduct that is capable of conveying 90 million gallons.

19,561. I think you intended to fence your aqueduct, or rather to embank it on either side, did you not, when you were in Parliament?—Yes, we spoke about doing so.

19,562. In order, as I understand, to prevent flood water from the Thames Valley getting into the aqueduct?—Yes.

19,563. Are you doing that?—No.

19,564. Therefore, flood water will get in?—May.

19,565. Have you been in the Thames Valley within the last week?—No, I have not.

19,566. Do you know how many thousand acres are under water?—No, I do not.

19,567. If thousands of acres are under water in the Thames Valley, must they not bring down enormous amounts of manure from farms and ditches?—No, I think not.

19,568. You think not?—I do not think that is a true statement.

19,569. However, you have given up the idea of banking your aqueduct, either before it reaches your reservoir or when it is conveying the water from the reservoir?—Yes.

19,570. You have told me some particulars of your aqueduct, but can you tell me any particulars about the reservoirs; can you give me the cost of excavation

and banking—of puddle and of puddling?—I could give you them, but I do not think I am called upon to tell what my contractor's prices are.

19,571. May I say that you have put in an estimate?—Yes.

19,572. Which shows that the cost of the total capacity would be 1,311,000l.?—Certainly.

19,573. Without details it is impossible, of course, to test that?—Certainly.

19,574. If you do not want it to be tested, so much, I think, the worse for your Staines Scheme?—I do not think so. I can only vouch for the truth of the figures.

(Mr. Pember.) We have got the contract, you see, Mr. Browne.

(Mr. Balfour Browne.) He could tell me what the puddling is, and what the excavation is, and what the pitching is.

(Mr. Pember.) Does not the contract cover all that?

19,575. (Mr. Balfour Browne to witness.) Again, have you got there the pumping engines and buildings to pump the water into the reservoir?—Yes.

19,576. How much is that?—They are all put in, as you see—first reservoir and pumping machinery, 683,335l.

19,577. Does that include the engines and buildings to pump the water into the district?—No.

19,578. Can you separate them?—This does not include anything for pumping into the district.

19,579. Have you got the amount of pumping into the district?—Pumping machinery for distribution is put down here at 181,980l.

19,580. For the whole of that 185½ million gallons a day from the Thames you say the pumping machinery would only be 181,980l.?—Excuse me, pumping to supply.

19,581. I say pumping machinery for distribution?—Yes. The cost of pumping to supply the quantity, increasing from nil to 55½ million gallons per diem during 16 years; of course, the machinery is for pumping 55½ million gallons.

19,582. I do not go into the 16 years again, because that my Lord asked you about, and I leave it where he left it. I pass from your details, so far as you can give me them, of the Staines Scheme, to another matter, and that is the estimate you put in at Question 18,286 as to the cost of the Welsh Scheme, so far as the bringing of the 123½ million gallons to London is concerned. Before I ask anything on that, just let me ask this: At the present time have the water companies to pay to the Thames Conservancy an annual sum amounting to 25,450l. per annum or thereabouts?—Yes.

19,583. By the Staines Scheme, of course, the quantity taken out of the Thames will be increased?—Yes.

19,584. And the payment increases?—I presume so.

(Mr. Mellor.) How is that payment calculated, Mr. Browne?

(Mr. Balfour Browne.) I think it is fixed by the various Acts of Parliament.

(Mr. Pember.) Yes.

(Mr. Pope.) It is an arbitrary fixture on the demand of the Conservancy, and it is the Act of Parliament governs it.

(Mr. Balfour Browne.) Although it is in a sense arbitrary, it is roughly in proportion to quantity.

(Mr. Pope.) No.

(Mr. Balfour Browne.) It has been increased whenever the quantity was increased.

(Mr. Pope.) That is another thing.

(Mr. Balfour Browne.) Roughly, in proportion to the quantity.

(Mr. Pope.) Not in proportion, but it is supposed to have some relation to the take of water.

19,585. (Mr. Balfour Browne.) Yes. Here again, by the Southwark and Vauxhall Act of 1893, I think that they, when they take the maximum amount of water, are to pay to the Thames Conservancy 3,915l. 10s. per annum. Do you know that, Mr. Middleton?—I think that is right, but I really forget.

Mr. R. E. Middleton.

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Mr. R. E. Middleton. 19,536. Therefore, for the 185½ millions that you are to take when these works are completed the payment to the Thames Conservancy would be 34,365*l.* per annum?—I really cannot check those figures.

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19,587. No, you will take them from me—you have assented to the three separately, and I have only added them together?—I have not assented to three separately, I have assented to one of them,

19,588. You assented to the 25,450*l.*?—I daresay it is quite right, but I cannot accept it, because I do not know.

19,589. I have them in the Act of Parliament?—Yes.

19,590. And I am right in saying that if you look at the Southwark and Vauxhall Act, 1898, section 21, you will find that the annual payments to be made by the company are to increase as the quantity of water increases?—Yes, within the figures you gave.

19,591. And as I told you, the maximum that they will have to pay when they take the total amount authorised is 3,915*l.*?—Yes.

19,592. Making a total of 34,365*l.*?—Yes.

(*Mr. Pember.*) Mr. Browne, would you, before you go to another point, forgive me for just referring for one moment to the cost of pumping for distribution of the 185½ million gallons?

(*Mr. Balfour Browne.*) I have gone from it.

(*Mr. Pember.*) If you do not mind my saying so, it did seem to some of us that you ignored that the cost was only for 55 million gallons, because we had got the pumping to supply for 130 millions already.

(*Mr. Pope.*) Mr. Middleton pointed that out.

(*Mr. Balfour Browne.*) I quite understood that, but I was trying to get from him the total cost of pumping; that he could not give me, as I understood, separate from the rest, but he gave the 185 as merely the additional amount for the Staines Scheme as designed in that table.

(*Mr. Pember.*) So long as it is understood I am satisfied. I beg your pardon—I did not know that it had been explained before.

19,593. (*Mr. Balfour Browne.*) I take it, Mr. Middleton, that you will agree that the payments will have to be increased as the quantity of water taken is increased?—I have no doubt that they will.

19,594. Therefore, as comparing the two schemes, Wales with the Staines, you must always remember that you will have to make a payment to the Thames Conservancy, which will not have to be made in the case of the Welsh water?—Yes, that is perfectly right and perfectly true.

19,595. I see that the Report of Lord Balfour's Commission points out the necessity: "Secondly, it is evident that no really satisfactory supervision can be exercised over several hundred miles of waterway without a considerable staff of inspectors and the staff which the Conservancy at present maintains, and which consists of two chief inspectors, two assistant inspectors, and four river keepers, appears to us to be utterly inadequate for the purpose, especially when it is borne in mind that these officials have other duties to perform besides that of inspection." So I take it that the moneys paid are partly, at any rate, paid for the inspection and protection of the water by the Thames Conservancy?—So I understand.

19,596. They say, further down on the same page, "While we would add the further recommendation already mentioned by us, that the staff engaged in inspection should be very considerably increased, the necessary funds for this purpose being provided by the water companies, or such other bodies as are permitted to take water from the rivers." Now, under these inspectional powers, are you aware that a large number of works have had to be carried out for the protection of London water which would not have been otherwise necessary?—I think that is scarcely a correct view of it; for the protection of the river from floods, I should have thought it was more.

19,597. The protection of the river from floods?—Yes.

19,598. Do you think that the idea mentioned in that report, that I have just been referring to, was to protect from floods, or to protect the sources of supply?—I should say that the report intended the protection of the sources of supply.

19,599. I thought so too?—But I do not think that that is entirely what has been done.

19,600. Now, I go to your Estimate 15 (a). First, I will ask you this—that calculation has not been made in detail, or upon a survey of the ground, or with any regard to the circumstances of the Welsh Scheme?—That is not exactly true, but is very nearly true.

19,601. Very nearly true?—Yes.

19,602. Did you ever in your life, as an engineer, when you were even designing works for Honiton and the other little places that you mentioned, do it on analogy, or did you do it upon surveys and levels?—Naturally, if I have got the surveys and levels, I use the surveys and levels, and I may check myself by analogy.

19,603. And there is no question about it that the real way to arrive at the real cost of works would be to do it in that way?—I do not say so necessarily at all, but I think analogy is a perfectly legitimate way.

19,604. Now we will see if it is perfectly legitimate. First of all, I want to knock off two items that I do not quite see here; this is an estimate, is it not, of the capital that would have to be expended in bringing water from Wales?—Of the capital and the interest.

19,605. First of all, we want, surely, to get at the capital, do we not?—Very well.

(*Mr. H. W. Cripps.*) I see this is calculated, he states, by analogy from the cost of those other schemes.

(*Mr. Balfour Browne.*) Yes, sir.

(*Mr. H. W. Cripps.*) It does not purport to be anything more.

(*Mr. Balfour Browne.*) No, it does not, I think, in examination-in-chief he admitted that it was the best he could do, but certainly not as good as he could wish.

(*Witness.*) I do not think I said so at all. I think an estimate by analogy is an exceedingly good one.

19,606. (*Mr. Balfour Browne.*) I will show you immediately what the analogy will lead you to, but I am first dealing with the purport of the estimate; it is to show by analogy or some means what the capital cost would be of bringing water from Wales?—Partly that and partly the interest.

19,607. I think you have already admitted that there are two items—7,296,000*l.* and 13,916,000*l.*—which come, together, to 21,212,000*l.*?—Yes.

19,608. That is to say, those two items represent more than one-half of your total sum?—More than half the 42,000,000*l.*

19,609. Is it a fact that you have already admitted that in calculating the cost of the 123 million gallons from Wales, the works in progress, which are works to supply more water, should not be included?—I think they should be included, myself. It is an advancing scheme.

19,610. Did you not admit in examination-in-chief to my Lord that it should not be, and did you not point down to the bottom of the page where the correction had been made?—No. I did not say it should not be. I said simply that I had put it in both forms, so that it might be taken either way.

19,611. So that it might be taken out?—So that it might be taken either way.

19,612. Very well; now we will see: First, we are going to include what it cost to bring 123½ millions from Wales?—Yes.

19,613. No part of that 7,000,000*l.* is to be expended on that?—No; no part of that 7,000,000*l.* is to be expended on that.

19,614. Further than that, I find that you have put down for interest 13,916,000*l.*?—Yes.

19,615. And that is shown upon your Estimate 16?—Yes.

19,616. And that is the interest, calculated up to the year 1936?—Yes.

19,617. Do you really mean to tell the Commissioners that the interest of that money is to be taken into the capital cost of bringing the water from Wales to-day?—I have not suggested that. I said "Total capital cost" just above that. It is part of the expense which will have to be incurred up to that date.

19,618. Would you really ask this Commission to say that the way to calculate the cost of the London

waterworks companies is to put down the capital, and then to add to it the whole of the dividends that have been paid since the inception of the companies?—Not the dividends, but certainly the charges.

19,619. That is, the interest?—No, it is the charges, not the dividends.

19,620. But this is interest?—This is interest which is to be paid by the ratepayer.

19,621. Which is in lieu of dividend?—Is it? I should not like to have dividends of that description.

19,622. Surely there would be no dividends paid on this on the supposition that we bring water from Wales?—The ratepayers will have to pay this accumulated interest, and I think it is important to the ratepayers that they should know it.

19,623. Important that they should know it?—Yes.

19,624. Do you not think that the ratepayers of London are paying interest to-day in their water rates?—Certainly; but they are not paying the 13,916,000% in that number of years.

19,625. And they will not have to pay that 13,000,000% until the year 1936?—I beg your pardon.

19,626. No, not till 1936?—They will have to pay part of it every year.

19,627. Of course; but 1936 is the time?—Certainly.

19,628. And you are adding the whole of the interest until 1936 to the capital cost of to-day?—Yes, that is the time when the reservoir is exhausted —

19,629. Now —

(Mr. Pember.) Let him finish. He said "That is the time."

(Mr. Pope.) I am sure you do not intend it; Mr. Middleton speaks rather under his voice and you do not hear his answer, and you think it is closed before he has completed it.

(Mr. Balfour Browne.) I did not hear. (To the witness.) Let me have your answer, please.

19,630. (Mr. Pember to witness.) That is the time as you were saying?—That is the year when the reservoir would be exhausted; that is the reason why it would be taken up to that date.

19,631. (Mr. Balfour Browne.) By exhausted, do you mean that the reservoir would then be supplying all the water it could?—Yes.

19,632. And as against that 13,000,000% you have not put down one penny for receipts?—Certainly not, because I have not put down a penny for receipts against the other side—against the Staines.

19,633. If that interest until 1936 is to be eliminated, and the works in progress are to be eliminated, then your calculation of 42,000,000% comes down to 21,000,000%.?—Yes; but I do not see why it should be eliminated.

19,634. I differ from you, and I can only differ from you at the present time. Now, with regard to your figures higher up; you start as to storage with analogy here?—Yes.

19,635. And one of the things you compare is the Birmingham Scheme?—Yes.

19,636. Are you aware that in the Birmingham Scheme, which is for 80 million gallons a day—?—75 million gallons, I think.

19,637. You are very likely right—for 75 million gallons a day, there are to be six reservoirs?—Yes, I believe that is so.

19,638. Varying in capacity from 1,320 million gallons up to 7,540 million gallons?—I daresay.

19,639. And that the total capacity of those six reservoirs is 17,360 million gallons?—Yes.

19,640. Do you think that if you have to make six vessels to hold the water it would be dearer than if you could make one?—I do not think, under the circumstances, it is.

19,641. You do not think so?—Not under the particular circumstances of that particular case.

19,642. What are the peculiar circumstances?—So far as I know the dams—I have not seen the whole of them—but, so far as I know them, they are very short.

19,643. Do you know Cefn Coch dam—what height it is?—No, I do not; I said "short."

19,644. It is in ignorance of that, that you compared the Welsh Scheme?—I said "short," excuse me.

19,645. I know, and I said "height"—both have to be considered, have they not?—Both have to be considered, but the height, I think, is not so great as the other.

19,646. Now compare that scheme, which is for a total capacity of 17,360 million gallons, with a total area of 1,500 acres, with Sir Alexander Binnie's Welsh reservoir, which is to be double the capacity, that is to say, double the water area, 3,000 acres, and is to be capable of containing 39,000 million gallons?—31,000 million gallons.

19,647. 39,000 million gallons?—Then we have never had the dimensions of the reservoir and the dimensions of the dam.

19,648. And it is in ignorance of that that you have tried to make an estimate?—Certainly, because it must be bigger than the one I have made it on.

19,649. Do you think there is really any analogy? Here is a reservoir with twice the water area, with far more than double the capacity of the six put together. Do you think you can compare the expense?—Certainly, I can; undoubtedly.

19,650. I see that, again, you have included, not only the Elan Valley of Birmingham, but Thirlmere and the Vyrnwy?—Yes.

19,651. Amongst other things, have you got in that estimate the money for 102,000 acres of land?—I have taken them exactly on the estimate they were taken on.

19,652. I am speaking of ours?—No, I have not put in any particular sum for your land.

19,653. You have not?—No.

19,654. Are you aware that in the case of the Welsh Scheme for Birmingham supply, they have purchased the watershed?—Yes, I am aware of that.

19,655. Are you aware that the Liverpool people have purchased the Vyrnwy Watershed?—Yes.

19,656. Are you aware that Manchester has purchased its watershed?—I understood that they had not the watershed.

19,657. I beg your pardon, the whole of the Thirlmere Watershed belongs to the Corporation of Manchester?—I thought it was the other way.

19,658. Therefore, in your figures, you have got money for the purchase of the whole of the watersheds?—Yes, I certainly have.

19,659. When you compare that with Staines, you have not got one penny for the purchase of any portion of the watershed?—I beg your pardon.

19,660. When you compare it with Staines, you have not got a penny in the Staines Scheme for the purchase of one acre of the watershed?—You have just been describing to us that we have had to pay a very large sum for the purchase of the watershed by paying a rental to the Thames Conservancy.

19,661. Really, do you call rental purchase?—Certainly, it is a purchase in this particular case.

19,662. In the first place, where do you pay the rent to—merely to people who are to go about inspecting?—Certainly.

19,663. Do you call that a rent?—It is a rent for the purpose of inspecting and for preserving the watershed for the use of London.

19,664. You have not got in your capital sum one penny even for that 54,000%.?—I have not.

19,665. Nor have you got one penny for the purchase of an acre of land for the protection of the water supply in the same way that these three great corporations have?—No, certainly not.

19,666. Do you think it was necessary for those three great towns to purchase their watersheds?—If it was necessary, I should have thought it was necessary for London; but apparently you do not think so.

19,667. You do not; you think that Parliament allowed Manchester, Liverpool, and Birmingham to throw away money unnecessarily?—No, but you say that you are not going to do it.

19,668. I have not said a word of that sort?—Excuse me.

Mr. R. F. Middleton.
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Mr. R. P. Middleton. (Mr. Pember.) You misunderstood the answer. He did not say that he did not think it necessary; he merely said it were, parried your answer by saying that you do not seem to think it necessary.

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(Mr. Balfour Browne.) I do think it necessary—absolutely necessary.

(Chairman.) We have been told, Mr. Browne, that instead of purchasing 102,000 acres, I think it is, which would be the watershed of the Welsh reservoir, you were only going to purchase the area of the reservoir itself, viz., 3,000 odd acres.

(Mr. Balfour Browne.) No, my Lord.

(Witness.) We were told so. Sir Alexander Binnie told us so, distinctly.

(Mr. Balfour Browne.) With great respect, I think not, my Lord. I have always understood that the scheme was to purchase, just as these three great towns did, the whole of the watershed.

See 14,905.

(Chairman.) No, the very contrary was said to us; it may have been a mistake, but it was so said.

(Mr. Balfour Browne.) I am told, my Lord, that you are right; that it is not the whole of the watershed, but any populated part that is necessary to be purchased for the protection of our water supply.

(Witness.) Sir Alexander Binnie said 3,300 acres which is simply the area of the reservoirs.

(Chairman.) He said so, distinctly.

19,669. (Mr. Balfour Browne.) I will leave it on your own answer; do you think that it is unnecessary to purchase the whole watershed?—I think it ought to be purchased, myself.

19,670. You think it ought to be?—Yes.

19,671. Why?—For the same reason that the engineers of the Thirlmere, the Vyrnwy, and the Elan Valleys thought it necessary to purchase.

19,672. That is scarcely a reason, that is again your analogy; do you think it necessary for the protection of a town water supply that the control over the whole watershed should be in the hands of that town?—Obviously, it is not necessary that it should be in the hands of the town if there is somebody else to look after it, as in the case of the Thames Conservancy.

19,673. (Mr. H. W. Cripps.) Do you know whether that purchase of the watershed was allowed for and done in the first instance, or was it a subsequent matter after Birmingham had got their Bill?—I really am not aware of that.

(Mr. Pember.) I cannot say about the Vyrnwy, it was in the first instance in the case of Manchester.

(Mr. Pope.) And Birmingham too.

(Mr. Balfour Browne.) And Birmingham too.

(Mr. Pember.) It was, in the first instance, in those cases.

(Mr. H. W. Cripps.) In both those cases? I thought the purchase of the land was after they had got their Bill.

(Mr. Pember.) It was after they got their Bill, but it was all part of their scheme. My learned friend Mr. Pope and I were in it. I was for the main landowner who owned about 50,000 acres, and we arranged for the purchase while the Bill was in Committee. The same thing was done with Manchester, because I had the honour of appearing in the compensation cases. Mr. Hollams reminds me that not only in the Birmingham case did they buy the land, but they bought the sheep too, and, indeed, so they did in the Manchester case.

19,674. (Mr. Balfour Browne to witness.) You think it necessary to purchase?—Yes.

19,675. As those three did?—Yes.

19,676. And upon these figures, taken from analogy, of course, you have got in the figures the purchase of those watersheds?—Yes, certainly.

19,677. Therefore, to compare with us, you are assuming that we will have to purchase?—Yes.

19,678. Do you think that if we did purchase 102,000 acres, there would be no return from them?—Exactly; then there might be the same return as in the Thirlmere, the Vyrnwy, and the Elan Valley. There may be a return.

19,679. And so there is; have you looked into the return?—I do not know what the return is; I have no means of finding out.

19,680. If there is a return, should you not have got the annual amount, capitalised that, and set it against the purchase value?—If I could have done so, I would.

19,681. But you have not done it?—I have not done it.

19,682. Of course, you know, that the idea of purchasing a watershed is not that it should remain absolutely unproductive or sterile?—No; after all the sum becomes a comparatively small one.

19,683. You told us the other day that the population in the Thames Valley was over a million?—Yes.

19,684. Do you know what the population in these valleys affected by the proposed Welsh Scheme is?—No, I do not, but it must be quite small.

19,685. Do you know that it is about 3,700?—I daresay.

19,686. And that a great portion of these will necessarily be displaced by the construction of the reservoir?—I presume so.

19,687. If it is necessary, and you say it is, to purchase the whole watershed for the protection of our water supply, where there are only 3,000 people, it is not necessary, you say, to purchase where there is a million?—I think I explained before that that is done by the payments made to the Thames Conservancy whose business it is to look after the preservation of the water of the Thames.

19,688. Again, you say this has been done on analogy?—Yes.

19,689. And it brings out, I understand, 91,611l. per million gallons of daily supply?—Yes.

19,690. Do you know that if you had taken out Longdon Dale, Rotherham, Bradford, Huddersfield, Leicester and Oldham and made an analogy upon them it would have worked out at 150,000l.?—I think it is exceedingly probable.

19,691. Are you aware that if you take Glasgow from Loch Katrine and make the analogy on that, instead of being 150,000l. per million, it works out only at 60,000l.?—I daresay.

(Mr. Pope.) There is no reservoir, you know.

(Mr. Balfour Browne.) I beg your pardon it is a reservoir like Thirlmere.

(Mr. Pember.) No.

(Witness.) I beg your pardon; it is perfectly different.

(Mr. Balfour Browne.) Forgive me, I think I know—Loch Katrine is raised, is it not.

(Witness.) How much?

19,692. (Mr. Balfour Browne.) I am not here to be asked questions?—No, but do you not see that the whole difference is between the raising. The other was raised 80 feet—Thirlmere is raised 80 feet.

19,693. Is it not a fact that if you choose you can get an analogy that will bring out any figure you like per million?—No, I think not—not taking fair figures. I have taken the three largest supplies that I could find.

19,694. The three largest?—The three largest that I could find.

19,695. Being, when all put together, a great deal less than the proposed scheme for London?—That may be; they are the largest that I could find.

19,696-7. Again, why have you put in the figure of 26,535l. and 279,549l. for pumping machinery and cost of pumping? What is the pumping to be done in a Welsh scheme which comes by gravitation?—It does not come by gravitation, as I have already explained, to the whole of London; it only comes to a portion of London.

19,698. Now let us see; is it the fact that there are portions of London to which the water has to be pumped to-day?—Certainly.

19,699. Are those the portions that you are calculating water will have to be pumped to?—No, the increase in supply to those same districts—not the same ones, but the increase in supply.

19,700. Is there any portion of London that is not supplied?—Yes, a good many parts that are only partially supplied.

19,701. On account of elevation?—No, on account of population.

19,702. Therefore, this pumping is not incident to the Welsh Scheme at all, but it is incident to the existing supply?—Certainly, as much to the one as to the other.

19,703. But why put it against the Welsh Scheme?—I have put it against both, and you will find a little figure below. "Credit cost of pumping saved" 352,411. The reason why the two are put in is in order to make the credit balance.

19,704. I am sure I do not understand that, I find here on the supply from the Yrffon two sums which have nothing to do with the Yrffon—namely, 26,535. *P*—Yes.

19,705. And 279,549. *L*; why are they there if they have nothing to do with the bringing of water from Wales?—They have to do with the bringing of water to London; they are for supplying the water to London; whether it is delivered from the Yrffon or whether it is delivered from the Thames, they are part of that supply.

19,706. Suppose that that water goes on being delivered from the Thames as it is to-day, that is a cost being already incurred?—No, it is not already being incurred, because this is a further supply; it is a supply of 123½ millions in excess of the 185½ millions already given.

19,707. Are you calculating that the 123½ millions is all to be pumped?—You can see that it is not so, because, on the figures that I have given, it is 8·1 million gallons daily.

19,708–9. I take it, that the way you have worked your analogy is to put the cost of the three together?—Yes.

19,710. And probably the supply from the whole three is three times as great as from the Vyrnwy?—The supply from the whole three?

19,711. I mean roughly?—Yes, from the whole three, of course.

19,712. It would be three times as great. Now, would it not be a much cheaper thing to get the whole quantity from the Vyrnwy, and to increase the Vyrnwy cost accordingly, instead of bringing in the Thirlmere and the Elan?—You could not possibly do it, I am afraid.

19,713. Why not?—Because there is not the water.

19,714. But suppose the water is there, would not the works be much cheaper to merely increase the Vyrnwy instead of making three independent schemes?—I do not think it would.

19,715. Well, you differ. Why, in your progressive Welsh estimates put in at Question 18,286, do you include the Ithon reservoir?—Because it was included in Sir Alexander Binnie's Report.

19,716. Do you know that Sir Alexander Binnie has never suggested to the Commission that it should be constructed as part of the present scheme at all?—So I believe.

19,717. You rather questioned what I said that you did not rely upon this method. Would you look at the Question 14,757? Lord Llandaff asked you: "Will you give us your reason for holding that to be a correct estimate?" (*A*.) I cannot say it is a correct estimate, but it is as good an estimate as one can make on the basis of analogy, and I believe it to be "a fairly sound estimate" *P*—Yes.

19,718. You agree, therefore, apparently, that no absolutely sound estimate can be made upon the basis of analogy?—I think that no absolutely sound estimate can be made on any other basis either.

19,719. How have you got at the works at Elstree?—As you will see, they are simply copied, in the particular case of Elstree, from Sir Alexander Binnie's figures.

19,720. No estimate at all there?—No, I was not able to make one.

19,721. Are you aware that you have copied them wrongly from Sir Alexander Binnie's figures?—I think that I may have done so, but to the best of my knowledge, I have not.

19,722. I think I can show you that you have copied them erroneously. I see in the same answer you state: "I may also, perhaps, quote Mr. Thomas Hawksley and Sir Frederick Bramwell, who stated that to provide 210 million gallons from Wales would cost "30,000,000." Where did they state that?—It is in

the Appendices to the Minutes of Evidence of Lord Balfour's Commission. I am afraid I cannot give you the page at the present moment, but it is in their letter on the Staines Reservoir Scheme, I think.

19,723. I should like you, if you can, to give me a reference?—Certainly, I shall be happy to have it looked up for you.

19,724. Are you aware that you have got here: "Add for service reservoirs at Elstree 1,314,750. *P*—Yes.

19,725. "Add for mains between service reservoirs at Elstree and the service reservoirs of the companies "3,000,000. *P*—Yes.

19,726. Those two together come to 4,314,750. Are you aware that Sir Alexander Binnie's estimate for the terminal works including filters, and for connecting with the existing systems, instead of being 4,314,000. is 3,056,000. *P*—I know that it is smaller.

19,727. You know that it is smaller?—Yes.

19,728. Why have you put a million against us there when you say you are only following Sir Alexander Binnie's figures?—I put it down as being taken from Sir Alexander's figures. I will look it up and see where I got it from.

19,729. That is a very considerable difference?—Certainly.

19,730. If I am right, 1,400,000. *P*—You cannot get very far away from it, because in Sir Alexander Binnie's Report he says 980,000. for this particular figure.

(*Chairman.*) I think, Mr. Browne, if my mind is not misleading me, that the difference arises in the mains. Sir Alexander Binnie had not allowed for the mains up to the service reservoirs of the companies.

(*Mr. Balfour Browne.*) The whole of the terminal works at Elstree?

(*Chairman.*) Yes; but these are works, not from Elstree, but up to the service reservoirs of the companies.

(*Mr. Balfour Browne.*) May I read it?

(*Chairman.*) Yes.

19,731. (*Mr. Balfour Browne.*) It is including filters for 120 million gallons and connexions with existing reservoirs, 3,056,000. That is Sir Alexander Binnie's estimate. I have not got it in the notes, but I think you will find that in the estimates. (*To witness.*) If Sir Alexander Binnie is right, your two figures, which come to 4,314,750., are about 1,300,000. wrong?—No, I beg your pardon; I do not say they are wrong—they are different.

19,732. They are wrong in this sense, that you pretend to borrow them from Sir Alexander Binnie?—No, I beg your pardon, that is not so. I never pretended to have borrowed the 3,000,000. from Sir Alexander Binnie.

19,733. No, I beg your pardon, you did not?—I only borrowed the 1,314,000.

19,734. Where do you get the 3,000,000. from?—From my own estimate.

19,735. Could you give me your own estimate of the 3,000,000.?—That is made up of the number of lengths of pipe at the usual prices.

19,736. But I want the length and dimensions. You cannot make up 3,000,000., you know, without some trouble?—Certainly; I can give it you. The reference to that is on page 476 of the Appendices to the Minutes of Evidence of Lord Balfour's Commission.

19,737. That is only a reference to the 1,314,000. *P*—With regard to the proposition to bring the suggested 210 million gallons per diem supplemental water from Wales, we are of opinion that it would not be feasible to bring this by means of an open channel; and, further, we are of opinion that such supply would certainly involve an outlay of at least "30,000,000."

19,738. That has gone back to Mr. Hawksley?—Yes, you asked me for the reference.

19,739. (*Mr. Pember.*) And Sir Frederick Bramwell?—Yes, and Mr. Hawksley.

19,740. (*Mr. Balfour Browne.*) Did you want to add anything on that?—No, nothing.

19,741. Again, is it not a fact that you stated that your estimate on analogy—and probably this of Sir Frederick Bramwell and Mr. Hawksley's is the same—

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Mr. R. E. Middleton. comes into competition with an estimate founded on actual surveys extending over the time since 1894?—Yes, that may be.

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19,742. Can you tell me to what height the companies have to pump at the present time?—They vary very much; they vary up to about 300 feet, or something like that.

19,743. I am speaking of the supply to the high level district, not merely of pumping water into London?—Quite 300 feet, some of them.

19,744. And for a large quantity, can you tell me?—No. The quantity, of course, is the figure that I have given you here as near as I can make it. It may be a little larger, but it is not much in excess of that.

19,745. Now, as I understand, the only criticism that you have made was that you had been on the site, and, as I understood, you said you found in a railway cutting a considerable amount of drift?—No, I do not think that was the only criticism that I made.

19,746. That is the only one that I remember?—I said there was drift in every one of the valleys.

19,747. Are you aware that in this particular valley we are dealing with there are very ample means of seeing the depth of the rock, and finding out whether this is merely a superficial stratum or drift, or not?—I do not think there are, so far as I have seen it.

19,748. I am afraid you have not devoted a great deal of time to it (*handing a map to the witness*). Upon that map we have put a red dot upon every place where the Ordnance Survey indicates the existence of a quarry, except, I think, the three dots in the river itself, where, of course, the river has cut into the rock. Does not that look as if there were ample means of finding out the depth of the rock?—No, I cannot say that it does.

19,749. You have not looked at any one of those?—I have not looked at those, except this one, I think (*pointing to the map*).

19,750. In the bed of the stream, itself?—Of course, I have seen it there.

19,751. You found the rock there?—Certainly.

19,752. The red line running across there runs close to a quarry, does it not?—Well, not very close.

19,753. At the other end?—At the other end it is some little distance away from the quarry.

19,754. Do you mean to say that that would be no guide as to that quarry?—I did not say no guide, but I do not think it is a thorough guide.

19,755. How long did you spend upon the site?—I have been there three times, I think, and I should think that I have spent half-a-dozen hours on each occasion.

19,756. And made no bores?—Certainly not.

19,757. Or trial holes yourself, of course?—Perhaps I might be allowed to say that I took the opportunity of asking Professor Boyd Dawkins to go with me.

19,758. Forgive me; if he is coming, by all means refer to him?—He examined all the sites, and he has reported exactly in accordance with what I have told you.

19,759. Unless you hand in here the report, and bring him here to be cross-examined upon it, you must not have the benefit of his evidence?—Perhaps, if you will excuse me, I might read a short letter which appeared in the "Times" the other day.

(*Mr. Balfour Browne.*) I object to letters in the "Times," and I object to leading articles in the "Times" too.

(*Mr. Pember.*) Especially the one you saw this morning.

(*Mr. Balfour Browne.*) Especially when we know where they come from.

(*Witness.*) This one professes to come from a friend of yours.

(*Mr. Balfour Browne.*) I daresay it professes.

(*Witness.*) It is nobody that I know.

(*Mr. Balfour Browne.*) I know the gentlemen who are professed friends. Perhaps he is one of those friends.

(*Witness.*) No; his name is Henry Hicks, M.D., F.R.S., and he professes to come from Wales and from the catchment area.

19,760. (*Mr. Balfour Browne.*) We will not have it, Mr. Middleton. With regard to the requirements of 1931, Lord Balfour's Commission said the total supply required at that date would be 415 million gallons?—Yes.

19,761. I am right in saying that the total present supply in London—of course, that is not only from the Thames, but from Kent and Hertfordshire—is a little over 202 million gallons. Is that so?—I will tell you in a moment.

19,762. About will do?—Yes, that is about right.

19,763. Therefore, I am right in saying that in 1931 the supply will be a little more than double what it is to-day—415 to 202?—Yes.

19,764. And, of course, to get that supply would involve completing the Thames supply up to 300 million gallons (I am still, of course, upon the Balfour Commission) with a storage and filter beds, as recommended by the Commission?—Yes, it is not quite up to the 300 million gallons.

19,765. It is close upon it?—It is 285 million gallons.

19,766. It would also involve new reservoirs being made in the Lea Valley to secure the present supply of 52½ million gallons a day?—Yes.

19,767. It would also involve new wells and pumping machinery to increase the 16 million gallons which is obtained from the wells by the East London Company and the New River Company in the Lea?—Excuse me, I think the amount got from the Lea is very much in excess of 16 million gallons.

19,768. From the wells?—The amount from the wells is very much in excess of 16 million gallons.

19,769. What is it—I thought it was 9 in the case of one?—It is 9½, I think, in the case of one, and about 19 in the case of the other.

19,770. At any rate, whatever it is—I do not know what it is in the case of the New River—but we had Mr. Bryan, who told us 9, was it not, or 8 to 9, in the case of the East London?—9½, I think it is.

19,771. Whatever it is, it would involve more pumping to bring it up to the 40 million gallons a day which was recommended by the Balfour Commission?—Yes.

19,772. It would also involve new wells and pumps in Kent to increase the 15½ million gallons a day pumped by the Kent Company in 1897?—The Kent were pumping, I think, the other day 18½.

19,773. That is 1898?—Yes.

19,774. I am speaking of 1897—up to the 27½?—Yes.

19,775. I daresay you know that Mr. Stoneham, in his 26th annual report to the Local Government Board, said that the total capital expenditure on the works of the companies amounted, in 1896, to 16,531,346l. ?—Yes.

19,776. In order to double the supply, will the companies not have to double the capital expenditure?—I should think it was probable that they might have to do so.

19,777. I pass from these matters to some minor matters that you have mentioned. At Questions 17,009 to Question 17,015 you told the Commission that you did not think an arbitrator would take into consideration the liability to frosts and droughts—so I read it?—Yes.

19,778. If, in times of drought, a water undertaking is not capable of fulfilling the provisions of Section 35 of the Waterworks Clauses Act and Section 7 of the Act of 1871, would not a deduction have to be made by the arbitrator for the works necessary to bring it up to that condition?—It depends entirely, I think, whether it is by their own default or not.

19,779. Take it that we find in one particular case there is a main 6 inches from the surface which was frozen in a particular frost; if it was laid 2 feet below the surface, it would have been frozen; should there not be a deduction to put that main at the lower level?—What proof is there that the main was laid at 6 inches below the surface?

19,780. Would you mind assuming it; I know nothing about it, and I am only assuming it?—That is just the point—the proof of default. I do not think there is any proof of default in the fact of finding a main 6 inches below the surface, because many roads have been scraped and cut down.

19,781. Just try to follow the supposition?—I am quite willing to follow the supposition.

19,782. That that was a main 6 inches below the surface, and it was frozen?—Yes.

19,783. And that, consequently, the water company was unable to fulfil its obligations?—Yes.

19,784. If it had been 2 feet underground, I suppose it would have been frozen?—I do not know that; I cannot answer.

19,785. Or 3 feet?—Probably at 3 feet it would not.

19,786. Under these circumstances, supposing I could show to the arbitrator that one company was in that condition and had laid its mains too shallow, should there not be a deduction?—If you could show that, I should say yes.

19,787. Of course, it depends upon what we could show to the arbitrator. Unless the undertaking is in a condition to earn its revenue, deductions must be made to bring it up to that condition?—Clearly, it does earn its revenue.

19,788. Would you mind answering the question: Supposing it does earn it by not giving the water for three months, do you say that, under those circumstances, a deduction would not have to be made to bring it to the condition that would enable it to earn its revenue by supplying in those three months—

(Mr. Pember.) That is a question of law which Mr. Middleton cannot answer.

(Witness.) I do not think I can answer that.

(Mr. Pember.) It depends entirely on what the statutes are.

(Mr. Balfour Browne.) Unfortunately, Mr. Middleton did express his own view.

(Mr. Pember.) I cannot help it; I did not ask him.

(Mr. Balfour Browne.) It was a very good lawyer who did—it was Mr. Mellor: "I would like to ask you 'this with regard to your last answer; I suppose if 'these companies were sold to any public authority, 'the liability to a frost, like the liability to a drought, 'would be considered in the price, would it not?'—"(A.) No, I think not, certainly," and he went on to enlarge upon that view.

(Mr. Pember.) It was his opinion, which may be worth a great deal or may be worth very little.

19,789. (Mr. Balfour Browne to witness.) You say in another question and answer that the frosts and droughts in the past are not elements which would appear in the profits of the company at the present time. Now, I ask you, if the droughts and frosts have prevented a company from giving a proper supply, whether that company is or is not properly qualified to earn its dividend—is it?—No, I do not think that is necessarily true at all.

19,790. Not necessarily true?—No.

(Mr. Pember.) Surely it depends upon the statutes, Mr. Browne. If they are to be exempt in the case of frosts and drought, I should think they were.

(Mr. Balfour Browne.) I entirely differ from you; that does not depend upon the statute.

(Mr. Pember.) That shows at once what is the use of asking Mr. Middleton.

(Chairman.) That has been the contention of the companies, I understand, that if frost or drought occurs they need not supply any water at all, and they go on receiving at exactly the same rate.

(Mr. Pember.) Quite so.

(Mr. Balfour Browne.) Again, my Lord, the arbitrator would have to consider that.

(Chairman.) Yes.

(Mr. Balfour Browne.) Because if that were so, and a drought was to last, say, the whole year, the water company would not be bound to supply a drop of water at all.

(Chairman.) That I understand to be the contention of the water companies, whether it be reasonable or not.

(Mr. Balfour Browne.) Under those circumstances, what number of years would the arbitrator have to multiply that revenue by?

(Chairman.) That is for him, and not for us.

(Mr. Balfour Browne.) No, my Lord, but he would consider it; that is all I am concerned about just now.

(Witness.) Surely a corporation is in exactly the same position. It is just as liable to default as a company, and there can be no question of the ratepayer having to pay under the circumstances.

19,791. But if that is so, if you are right, that that would not be considered, and that a company might go on not supplying water and yet earning its dividend, is there not a necessity for a special arbitration clause enabling the arbitrator to consider that?—No, certainly not.

19,792. You think not?—Well, what is to happen with a corporation when a corporation does not supply for months and months together?

19,793. Does it? Would you mind mentioning one?—Yes, I could give you several instances.

19,794. Could you; I do not know of them?—I do.

19,795. Has there been any failure in the case of Liverpool, Manchester and Glasgow?—Yes.

(Mr. Pope.) Manchester is on short supply at this moment.

(Mr. Balfour Browne.) Manchester on short supply?

(Mr. Pope.) Yes. You will see the advertisement in the "Manchester Guardian" every Saturday.

(Mr. Balfour Browne.) Not at the present time, Mr. Pope.

(Mr. Pope.) At the present moment; I saw it last Saturday.

(Mr. Balfour Browne.) I think you must be mistaken.

(Mr. Pope.) All I mean to say is that they advertise that caution has to be used, and they refer for certain purposes which are *aliunde* domestic supply.

(Mr. Balfour Browne.) Still they are on the constant supply.

(Mr. Pope.) No doubt. I do not mean to say anything to the contrary.

19,796. (Mr. Balfour Browne.) Very well. (To the witness.) Have you any idea as to the relative cost of managing large and small waterworks?—I have some idea on the subject.

19,797. Assuming, of course, in the case of both, equally good management, does it not stand to reason that the cost of managing a large concern involves less expenditure relatively than for a small concern?—I think that there is a point beyond which that is not true. When the size of the machine becomes very vast indeed, the cost is not inclined to fall, but rather to rise. But I can scarcely give you figures for that.

19,798. I think I can?—I cannot.

19,799. Do you know that on the average of the eight London Companies, the cost of management is 44 per cent. of the income—do you know that?—It seems a little high.

19,800. It seems a little high to everybody. Are you aware that at Liverpool the municipal management comes out only at 31 per cent. of the income?—I am not able to check the figures, and therefore I can scarcely give a reply.

19,801. Have you really offered opinions on these matters without taking the least trouble—because you speak about this very matter at Question 17,069?—Certainly, I do.

19,802. What data have you got to go upon?—The data of general knowledge.

19,803. But that surely is not sufficient. Have you gone into the question in relation to Liverpool, Glasgow, Manchester or Birmingham?—I have not.

19,804. Nor compared it with the eight London companies?—I have not, because I had not the means of doing so.

19,805. If these figures are right, that in 1896 it cost 44 per cent. of the receipts of the eight London companies on the average—

(Mr. Pember.) Where do you get the figure of 44 per cent. as a matter of detail?

(Witness.) I am very anxious to hear that.

(Mr. Balfour Browne.) It is putting the eight London companies together; the cost of management comes out, as compared with income received, at 44 per cent.

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(Mr. Pember.) Mr. Lass's table gives it 40.

(Mr. Balfour Browne.) Would you mind looking at what year you are speaking of?

(Mr. Pember.) Yes; 1897-98.

(Mr. Balfour Browne.) Exactly. I told you I am speaking of 1896; that is the figure I have, and I am not taking it from Mr. Lass's table.

(Mr. Pember.) That is the expensive year of the frost.

(Mr. Balfour Browne.) It is management I am speaking of, not repairs.

(Mr. Pember.) No, it is management and maintenance. If it were management only, you would be hopelessly wrong, because the management alone is only about 7 per cent. But what we took you to mean was total management and maintenance together. For the year 1896 it might have risen to 44 per cent. in consequence of the frost, but in 1897-98 it was 40.89.

(Mr. Balfour Browne.) I have taken it, not from Mr. Lass's table, but from the auditors' accounts.

(Mr. Pember.) And that includes rates and taxes, 200,000*l.* odd, which is one-eighth of the whole.

(Mr. H. W. Cripps.) I think that is a fact you ought to agree upon, because it is very important that a fact of this character should be ascertained.

(Mr. Pember.) I think it should be agreed upon, too. Of course, it is a very much cheaper thing to manage and maintain a supply which is entirely one of gravitation, such as I believe the Thirlmere supply and the Vyrnwy supply to be, whereas ours is partly gravitation and partly pumping.

(Mr. Balfour Browne.) I have got, my Lord, the last authentic document, Mr. Stoneham's Report.

(Mr. Pember.) Then there is the difference in the price of coal down here and at Manchester.

(Mr. Balfour Browne.) I have here the figures for 1896, which is the last year on this table.

(Mr. H. W. Cripps.) Very well; I should like to know what those figures come to now.

(Mr. Balfour Browne.) I will give them to you now, sir.

(Major-General Scott.) Will you say what the heading of the column is under which they appear?

(Mr. Balfour Browne.) The table is called "Summary of Accounts of the Metropolitan Companies for the 16 years from 1881 to 1896." It is upon page 226 of Mr. Stoneham's Report. I find that the income given in 1896 is 2,083,027*l.*, and the working expenses 915,833*l.*, and I am told that that works out at 44 per cent.

(Mr. H. W. Cripps.) What is the meaning of it? What is included in the working expenses?

(Mr. Balfour Browne.) I think everything, just as in the case of the working expenses of Liverpool.

(Mr. H. W. Cripps.) Not mere management.

(Mr. Balfour Browne.) No, it is more than management.

(Mr. H. W. Cripps.) That is what struck me, but you were using the word management only.

(Mr. Balfour Browne.) May I say that my learned friend must be wrong when he said that that was the expensive year, because I find that the year before was much more expensive. The working expenses in the year before came out at 972,917*l.*

(Mr. Pember.) Yes, those were the two expensive years. As to how the expense is to be allocated—

(Mr. H. W. Cripps.) Your question, in the first place, alluded to management.

(Mr. Balfour Browne.) It was too limited a reference. It ought to have been management and working expenses.

(Mr. H. W. Cripps.) Quite so.

(Mr. Pember.) Mr. Browne, I daresay it has not caught your eye, but 1895 and 1896 are enormously above any preceding year.

(Mr. Balfour Browne.) Of course.

(Mr. Pember.) Now, for instance, 1894 and 1893 are two most expensive years, and yet they were well under 800,000*l.* So you see there is a very sudden jump from 792,000*l.*, which is the highest of those two,

to 1895, when it is 972,000*l.*, and, of course, that is because it is an abnormal year.

(Mr. Balfour Browne.) Of course, but I am taking Liverpool on exactly the same year.

(Mr. Pember.) I do not care really about that. Liverpool may not have had the same abnormal expenses in that particular year, for all we know.

(Mr. Balfour Browne.) I think if you can be allowed to reason from analogy, we may be. I have got now here the year 1897, which my learned friend says is not an abnormal year. That works out for the working expenses for the eight companies to 896,000*l.* as against 915,000*l.*

(Mr. Pember.) Now, then, you see at once, Mr. Browne, that there is a drop from 1897 as against 1895 of from 972,000*l.*, very nearly 973,000*l.*, down to 896,000*l.*

(Mr. Balfour Browne.) And probably the next year, 1898, will be very much worse.

(Mr. Pember.) I cannot argue about the probabilities.

(Mr. Balfour Browne.) We can, because we know of the drought.

(Witness.) I might point out also, that the whole of the figure for pumping is not comparable; you have got an enormous figure for pumping charges to be taken out of that to make it comparable, because the one is a gravitation supply, and the other is not.

19,806. (Mr. Balfour Browne.) You mean to say that a gravitation scheme is cheaper than a pumping scheme?—I did not say so; in this particular item of maintenance it undoubtedly is—unquestionably.

(Mr. Pope.) I do not know whether Liverpool corporation rates the waterworks, but if they do not, there is an item for rates and taxes included in the working expenses which would account for a difference of 200,000*l.* in a moment.

(Mr. Balfour Browne.) I beg your pardon; they are rated and taxed in the same way.

(Mr. Pope.) No, surely not.

(Mr. Balfour Browne.) Indeed they are absolutely, for I have a rating case just now for the Dewsbury and Heckmondwike Joint Board.

(Mr. Pope.) Yes, for a joint board.

19,807. (Mr. Balfour Browne to witness.) Are you aware that there is a large amount of water pumped in Liverpool?—In Liverpool, yes, but not anything like the whole.

19,808. Not the whole, I admit; neither is the whole pumped here, is it—not every drop of water is pumped here?—Every drop.

19,809. Only for distribution?—Only for distribution.

19,810. (Mr. Pember.) It is all pumped from the river?—It is all pumped from the river.

19,811. (Mr. Balfour Browne.) Surely it makes all the difference whether you are pumping merely for distribution, or whether you are pumping from deep wells in the ground?—Some of it has to be pumped from deep wells in the ground as well as for distribution.

19,812. But a very small proportion?—A very small proportion.

(Mr. Pember.) About 30 million gallons a day.

(Witness.) I might also say that when you asked me the question I understood it to be a question of management, and, as a question of management, I could not understand it.

19,813. I have admitted to one of the Commissioners that I used the word wrongly; it ought to be management and total working expenses?—Yes, but when I answered you it was, as I understood you, to put it on the question of management.

19,814. In Mr. Stoneham's Report we have not got the management separate from the other things—

(Mr. Pember.) We have in Mr. Lass's table.

(Mr. Balfour Browne.) We do not know that that is accurate.

(Mr. Pember.) I do not know that Mr. Stoneham is either.

(Mr. Balfour Browne.) He is the Government auditor.

(Mr. Pember.) That does not make him accurate.

(*Sir John Dorington.*) Lass is supposed to be accurate.

(*Mr. Pember.*) I thought Lass was accepted as right.

19,815. (*Mr. Balfour Browne.*) At Question 17,120 you said that the companies have a prospective income; as I understand, that can only be in virtue of their ability to supply a greater population under their existing powers; is that what you mean?—I presume that there is no reason why they should not get further powers, but they have undoubtedly a prospective income under their existing powers.

19,816. A prospective increase of income?—Yes.

19,817. To the extent of the 185½ millions?—Yes, and what they can get from wells in Kent and in the Lea, and from the Lea Valley.

19,818. But you told the Commission that the cost of the Staines reservoir—the cost of the increase—would be a deduction to be made from the purchase price?—No, that was not exactly what I said.

19,819. I will read what you said. The Chairman said, "We have been told over and over again—I do not know whether it is wrong—that the capital has been expended only for 866 millions, the whole of the capital that has been expended is only for that 866 millions. Very well, that is all that appears, therefore, in the revenue or capital of the companies upon which the arbitrator would have to proceed?"—(A.) Yes, on the revenue earned. (Q.) And all the balance would be a deduction to be made from the purchase price? (A.) That is so. Then Mr. Pember said, "Unless," and the Chairman said, "Unless there was a prospective income to balance that?"—(A.) "Yes." What do you mean by the balance being a deduction from the purchase price?—That is to say, if you have to expend sums for reservoirs which are in excess of the revenue which they will bring in, there would be, of course, a loss to the company.

19,820. You told me at Question 19,109 that since 1891 4½ millions had been expended merely in improving the means of efficiency of supply without getting more water; all that would be a deduction?—Excuse me, that is just exactly what I deny. I denied it flatly.

(*Mr. Pember.*) That is what he did not say.

(*Witness.*) That is for the purpose of extending the supply.

19,821. (*Mr. Balfour Browne.*) But no more water is got for that. The only additional supplies of water are got from the difference between the 4½ millions and the six millions, the amount that is expended on the Staines Scheme for 35 million gallons, and upon the Southwark and Vauxhall for 20½ million gallons?—The money is to be expended in extending the supply.

19,822. (*Mr. Pember.*) Utilizing the supply?—Utilizing the supply.

(*Mr. Balfour Browne.*) Let him answer the question.

(*Mr. Pember.*) I like good English.

19,823. (*Mr. Balfour Browne.*) It is not extending at all?—It is extending.

19,824. A great deal of it is, I suppose, for the reservoirs, for further subsidence and for filtration?—Some of it is for that purpose, of course. As the supplies increase to the districts, so must the filtration be increased, so must the pumping be increased, and so must the mains be increased.

19,825. Surely anything that is merely making it more efficient and not increasing the quantity that you have to supply does not yield any prospective income?—I said it was increasing the quantity we have to supply.

19,826. Some of these works certainly do not—a new filter will not, for instance, increase the water you can draw —.

19,827. (*Mr. Pember.*) It enables you to supply more water?—Yes.

19,828. (*Mr. Balfour Browne.*) It may or it may not. Supposing there is a company drawing up to its full amount just now and it puts in a new filter, the cost of that filter which is merely for efficiency would be a deduction according to you?—No, I do not think it would.

19,829. I do not understand what you said then because you said the balance would be a deduction?—

The balance, if it does not pay, would be a deduction, but, clearly, the money that is being expended is no doubt intended to improve the works, but also to supply more people, and so far as it supplies more people so far there is an increase of revenue.

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19,830. That is true, of course, with regard to the Staines Scheme and with regard to the Southwark and Vauxhall?—It is true for the whole of the rest. The supply is not 130 millions at the present time. The supply from the Lea Valley and from the Kent is not exhausted; they can supply several more millions in every case, and that is all revenue earning money.

(*Mr. Pember.*) Of course, Mr. Browne, we can concede that if there is not a corresponding increase of income, the expenditure there will be a deduction.

(*Mr. Balfour Browne.*) It must be, of course.

(*Chairman.*) Yes.

(*Mr. Balfour Browne.*) Anything that is expended merely for efficiency and does not increase the earning capacity is a deduction?

(*Witness.*) Certainly; undoubtedly.

19,831. You also relied upon the quinquennial valuation as giving a prospective increase of income?—I do not think I relied upon it, but of course it is so.

19,832. You mentioned it?—Yes, I mentioned it.

19,833. You mentioned it at Question 17,123?—Certainly.

19,834. Against that, must you not put the increase of consumption per head of the population?—Supposing there to be an increased consumption.

19,835. Supposing that to be so, but I think we have already gone over the figures, and I will venture not to touch them again?—But I do not think there is any reason to suppose that there will be eventually any increase at all.

19,836. (*Chairman.*) Any increase at all of what?—In the supply per head of population beyond the 35 gallons.

19,837. (*Mr. Balfour Browne.*) At any rate, we went over the figures in the case of every different company on the last occasion, and the Southwark and Vauxhall showed an increase since 1891 of 9 gallons per head, and so on?—Yes.

19,838. I do not want to go back upon them; if that were continuous, that would have to be set against any improved valuation by the quinquennial?—If it were to be continuous; that is the whole question—if.

19,839. And that will be a matter of course for the arbitrator, if there ever is an arbitration, to determine; and he will, perhaps, consider it then, when the facts are before him. You said, at Question 17,152, that the companies had an adequate supply. Do you think that is true in regard to what has happened in this year? Do you say that the companies have an adequate supply, having regard to what has happened in East London?—Yes, an adequate supply—an adequate supply, remember.

19,840. I do not know what you mean by "supply"?—Adequate water. They have not the means of dealing with it properly, but they have adequate water.

19,841. What is the good of having adequate water if you have not the means of dealing with it?—We have been, I think, on several occasions, going the other way about—that we have not got the water.

19,842. Never mind what we have done on several occasions; suppose they have a million gallons and they cannot get it to the consumers, what is the good of having an adequate quantity if they cannot supply?—They must get it to the consumers.

19,843. It must not be taken into consideration that they have adequate water, as you say?—I think so, certainly. I think it is part of their asset.

19,844. Part of their asset?—Certainly.

19,845. Whether it can be supplied or not?—Certainly, it is a part of the asset.

19,846. What do you mean by adequate water—relying upon the Thames up to 400 millions a day?—They have no means of taking that at present, but supposing they get powers for it, yes. At the present time they have got powers for taking 185½ millions, and they are only taking at the present time about 114 or 115.

Mr. R. E. Middleton. 19,847. You mean, because water is flowing down the Thames, that they have got adequate water?—It is adequate water.

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19,848. And you call that adequate water an asset, although they cannot get it without further works?—Surely they can get that.

19,849. Not the 185½ million gallons without further works?—No, but they can get sufficient for their present purposes without further works.

19,850. Sufficient for their present purposes, barring a year like 1898?—No, there is no company from the Thames that has at all failed in this year.

19,851. I am not speaking of the Thames; you said the companies had an adequate supply?—But we were speaking of the Thames, because the 185½ million gallons is from the Thames.

19,852. I am speaking of all the companies; you said the companies have an adequate supply?—Yes, I did.

19,853. East London failed?—Certainly.

19,854. The Southwark and Vauxhall have not got an adequate supply, because they came to Parliament last year to get the power to obtain an adequate supply—

(*Mr. Pember.*) They have got it now.

(*Mr. Balfour Browne.*) They have got it now.

(*Witness.*) They have got the means; they can use the water.

19,855. (*Mr. Balfour Browne.*) Forgive me, they have not got it now; they have only got the means?—But they can pump the water.

19,856. If they do not carry out the works, that power they would not have?—If they do not carry out the works.

19,857. With regard to another matter which you mentioned, the separation of the outside districts from the inside districts, am I right in supposing that your criticisms may be summed up in this—first, the fact that there are a great number of both main pipes and service pipes crossing the boundary?—Yes.

19,858. That was the first objection?—Yes.

19,859. Now I will deal with that, and I will come to the others afterwards. So far as they are main pipes, is there any difficulty in inserting meters between the inside and the outside, or the outside and the inside?—There is no difficulty in inserting meters, but they might be, I think, and would be, very troublesome afterwards. The management of several meters, of course, is very much more troublesome than the management of one.

19,860. If meters were inserted, then the difficulty as to the mains would be got over?—No, not entirely.

19,861. What other difficulty would there be?—Because many of those mains supply from branch mains inside the district from outside.

19,862. We will deal with that afterwards, but I am speaking of mains passing over the boundary?—That is perfectly correct, for mains passing over the boundary.

19,863. I will deal with the others afterwards?—No, I mean what I have said already does refer to those mains passing over the boundary.

19,864. If the water is measured and passes from the one to the other, surely that is all you want?—No, it is not all you want.

19,865. What else?—If that main outside supplies from a branch main inside, of course, you are measuring something that is supplied within the boundary.

19,866. Have you never heard of works being separated between two owning authorities?—Certainly I have.

19,867. And the same thing would happen there?—But it means the alteration of the works if you do that. If that main crossing the boundary supplies after crossing the boundary from a branch main within the county of London, then that metering is not a satisfactory or an efficient metering.

19,868. (*Chairman.*) You only want a second meter to the branch main that comes back into London?—Or an alteration of that main so as to connect behind the meter.

19,869. (*Mr. Balfour Browne.*) Have you ever had any practical experience of such a separation?—I have not.

19,870. So far with regard to the mains; you have to have meters, perhaps more than I was suggesting. So far as the service pipes are concerned, is it not easy, at a comparatively very small cost, to divide them at the boundary?—I do not think it is.

19,871. Why not?—By the service pipes; do you mean the branch pipes?

19,872. Yes?—In a great many cases they do not go off the same main; they go off a branch loop pipe.

19,873. That is not because your pumping mains are also supply mains?—They are also supply mains.

19,874. I will come to that immediately, because that is another branch. So far I have dealt with one of your objections. I think the next was that the water which, in many cases, has been accustomed to pass from outside to within the boundary would have to pass from inside to outside the boundary in future?—Yes.

19,875. Is there any difficulty in that?—I think there is considerable difficulty in the construction. There is considerable expense. There is no absolute impossibility about it, but there is considerable expense involved.

19,876. Would not the difference in pressure on the two sides make the system self-acting?—No—at least, I do not see how it could—

19,877. Just suppose that at any time a district—take the Lambeth district—should not be fully supplied by the Lambeth pumping; the pressure will, of course, at once decrease, and the quantity of water passing in by gravitation would in consequence increase, would it not?—Yes.

19,878. And be recorded by the meters?—No, it would not be recorded by the meters in that case at all.

19,879. Why not?—Because the meter was counting outside, not in.

19,880. Why cannot there be a meter to count what is going in?—You cannot have a meter that will count both ways.

19,881. No, but you can have another meter?—No, because you will have to have a back pressure valve—

19,882. The back pressure valve will do it?—No. By which it could be turned into another main—entirely on to another main—which makes a very considerable complication of the system.

19,883. Have you gone into any calculation of what these very small changes would amount to?—I have not, but I am perfectly certain that they would not be small changes.

19,884. You state at Questions 17,295 and 17,302 as an objection that the mains are used both for pumping and for supply?—Yes.

19,885. Is not that an antiquated and a very objectionable system?—I do not think there is any very particular objection to it.

19,886. Is it not antiquated; are these mains used for both purposes in well-regulated companies to-day?—I think so.

19,887. Where?—In London.

19,888. I am not speaking of London, but outside London; I said "well regulated"—the question is whether London is well regulated?—I think they are well regulated, and I was referring to London. I am afraid I cannot go outside.

19,889. If you had to lay out a works to-day, would you use your pumping mains for distribution?—It entirely depends upon whether it was available for distribution. In a great many cases it is not. I have no objection to it. I see no reason why it should not be used for distribution in some cases.

19,890. Do you know of any large undertaking in the hands, we will say, of a municipality where such a thing exists to-day?—I do not know of a similar system in the hands of a municipality.

19,891. You do not think, as some engineers do, that if these works get into the hands of a public body to-morrow, that system would be put a stop to?—No, I should doubt it very much.

19,892. Now, again, at Question 17,303, you point out that the county of Surrey would be pumping from Seething Wells into London and then out again?—Yes.

19,893. What is the objection to that?—Because it makes a very large amount of extra mains—an unnecessary length of pumping mains.

19,894. There is no harm done to London by having the water passed through it, is there?—I was talking about Surrey rather than London; the harm is to Surrey rather than to London.

19,895. To Surrey?—Yes, Surrey would also have these mains passing through London, which I presume it would have no power of access to.

19,896. Are you speaking on behalf of the Surrey County Council?—I am not speaking on behalf of anybody.

19,897. I understood you were speaking on behalf of—?—You asked me whether it was a disadvantage to London, and I said the disadvantage was, in my opinion, to Surrey.

(*Chairman.*) How would you suggest, Mr. Browne, that Surrey could get at a main that passes through the county of London?

(*Mr. Balfour Browne.*) My Lord, every main of every one of these large corporations passes through a dozen different local authorities' districts.

(*Chairman.*) You mean you would have to give them powers to come into London.

19,898. (*Mr. Balfour Browne.*) To break up streets and do the necessary works, subject, of course, to the necessary supervision of the county of London. Our pipes to Wales, if they ever pass through, will have to pass through probably 100 local authorities' districts. (*To witness.*) Now, again, on your calculations—and I think this is the last matter that I need ask you about with regard to the financial considerations—must not the comparison between the Welsh supply of London and the Thames supply be looked at in relation to the hands that are going to carry out the future supply?—We have, I think, looked at the financial considerations from the financial point.

19,899. Supposing Staines is to be the source of supply in future, your idea is that the companies are to remain the purveyors of water?—I do not see why they should not do so,

19,900. That is the idea?—Yes.

(*Chairman.*) No, not exactly.

(*Mr. Balfour Browne.*) I think that is the idea, my Lord, with which Mr. Middleton comes here, at any rate—I do not say necessarily.

(*Witness.*) I am stating the facts, whether it belongs to the companies, or whether it belongs to anybody else.

19,901. Is it your idea that if the companies carry out this enormous scheme to supply 400 million gallons a day to London, they will do it subject to a sinking fund clause, so as to practically get little or no benefit from the capital expended?—I should imagine that the sinking fund clause would, under those circumstances, be done away with.

(After a short adjournment.)

Mr. WALTER HUNTER called and examined.

19,913. (*Chairman.*) You are a member of the Institution of Civil Engineers?—Yes.

19,914. And of the Institution of Mechanical Engineers?—Yes.

19,915. And engineering director of the Grand Junction Waterworks Company?—Yes.

19,916. Joint Engineer of the Staines Reservoir Joint Committee?—I am.

19,917. And you practise as a civil engineer at Westminster?—I do.

19,918. You have been a member of the London County Council?—That is so.

19,919. And you have represented the London County Council on the Lea Conservancy Board?—I have.

19,920. I assume you have paid attention to this question of the London water supply?—Yes.

19,902. Done away with?—I should say so.

19,903. If the sinking fund clauses are done away with, the capital would have to be raised by the companies to give the person purchasing it or subscribing it a profit?—Yes, I suppose so.

19,904. On the other hand, if the capital is raised for the Welsh Scheme by the County Council, it would be borrowed at a cheaper rate merely for interest without profit?—Well?

19,905. Is that not obvious?—I am not very well versed in the financial part of the question, but we have had the figures before us before, and I have pointed out that 2½ per cent. was the interest in the one case and 2½ per cent. in the other, as near as I can get it.

19,906. You would prefer not to deal with the finance, but I should have thought that was obvious—that if the sinking fund clauses are to be done away with, that means that the subscribers of capital in the future would expect a profit as all companies' shareholders do?—I presume the subscribers of the present capital on debentures do get a profit now.

19,907. Lenders of money do not get a profit; they get interest?—Well, interest if you like to call it so.

19,908. Do you mean that the companies should be compelled to raise the whole of the money by debenture so as not to give any profit?—No.

19,909. Therefore, you do anticipate a profit being made out of this large expenditure of money?—I do not quite follow you, I am sorry to say. You mean that a certain portion of the capital would have to be raised as shares.

19,910. Would have to be raised by shares?—Certainly, I should say so.

19,911. On the other hand, of course, if it was in the hands of a municipality, no part would be raised by shares at all, but all would have to be borrowed upon the security first of the works (which is all that the companies have to offer), and then upon the security of the rates, which is something that enables them to borrow more cheaply even than a company?—The question is whether it could borrow much more cheaply than a company. I put it down at an eighth per cent. between them.

19,912. We usually think that the better the security the lower the rate of interest, do we not?—I do not think the security of the companies can be a very bad one, considering the position of the shares.

(*Mr. H. W. Cripps.*) Is not this very argumentative?

(*Mr. Balfour Browne.*) I am told, sir, that we must rather put our arguments through the witnesses, so I am trenching; but I do not think I have anything more to ask Mr. Middleton. I think it is going into argument.

(*Chairman.*) Have you any question to ask?

(*Mr. Pope.*) I do not propose to ask any.

(*Mr. Pember.*) We think not, but perhaps if there is anything we think it advisable to put, we might ask Mr. Middleton to-morrow morning. I do not think it is likely there will be.

Mr. R. E.
Middleton.
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Mr. W.
Hunter.

Mr. W. Hunter. a Staines reservoir scheme for an added supply from the Thames must be adopted, or the water must be got from Wales?—That is so.

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19,927. Those are the two schemes before us at present; and the question for us to determine is what the cost of those two schemes is likely to turn out to be?—Yes.

19,928. I will take your general opinion first. In your judgment, which will be the less costly of those two schemes, whether the companies remain as they are, or whether they are purchased by a single authority or by more than one authority?—In my judgment, the Staines scheme would be much the less costly.

19,929. In connexion with the Staines scheme there are certain propositions that I think you desire to discuss, namely, one that there should be no pumping for 15 days after the commencement of flood?—Yes.

19,930. Was that your own opinion originally?—No; that was an opinion which was expressed by certain officers of the Local Government Board, to whose opinion, in placing the scheme before the public, we thought it desirable, for the moment, at any rate, to defer.

19,931. (*Major-General Scott.*) Can you state where that opinion is to be found? I take it that what you quote, or what you think has been stated, is that the first 15 days of flood should be rejected, is that so?—Yes.

19,932. That is what you think has been stated?—Yes.

See 20,253.

19,933. Now, can you refer me to any report or any statement to that effect?—No; I do not think there has been any public report in regard to the matter at all. I think it was contained in a letter to the late Mr. Fraser; it was just a sort of opinion given at the time in a private way.

19,934. (*Chairman.*) From whom?—I am not sure whether it was from Major-General Scott or from somebody else; I do not recollect for the moment, but I have a strong recollection that some opinion of that sort was expressed at the time, and that was why we took the 15 days.

19,935. And not from any conviction of your own?—Not from any conviction of our own.

19,936. What do you say about it now that the matter has become a little more urgent?—Subsequent reflection and discussion have led me to the opinion that no arbitrary line should be laid down in regard to pumping flood water, but that the time of commencing such pumping should be left to the discretion of the engineers in charge, who would always be unwilling to take flood water unnecessarily, owing to the additional work which it throws upon the filters. After more fully considering the question, moreover, I am of opinion that no such restriction is necessary when the water is stored, even for a few days only, in reservoirs of ordinary size, and much less so when large reservoirs form part of the works, like those being constructed to the designs and under the direction of Mr. Middleton and myself at Staines.

19,937. Have you any practical experience that fortifies you in this opinion?—Yes, I am fortified in this opinion by my experience of the Grand Junction Waterworks at Hampton, where I have this year modified the system of working, by using a 45 million gallon storage reservoir as a subsiding reservoir, drawing off the water from the surface instead of from the bottom. This simple alteration has so lightened the work upon the filters that they have worked much longer than was previously possible without the necessity of cleaning them. In my opinion, the rejection of the first two days of any flood, or series of floods, which would be sufficient to cleanse the surface of the land and to wash out the ditches, would be all the restriction that is desirable, and that even this restriction may be regarded as precautionary rather than necessary.

19,938. Does not at least the first of the flood water which comes down come down with a good deal of manure and material likely to breed bacteria?—No doubt it does wash out the ditches, but I think that would be practically done with after two days.

19,939. Surely it would take more than two days for the scouring of the ditches in the Upper Thames to come down to Hampton, would it not?—I suppose it would take about two days. I suppose the water would

run about two miles an hour, perhaps, or something like that.

19,940. (*Mr. Pope.*) Faster than that?—Faster in time of flood. Therefore it would take a long reach of the river. As a matter of fact, although I have given that opinion, I have taken six days in my calculation which I place before your Lordship, so as to agree with Mr. Middleton's statement. (*Mr. Pember handed in the following table.*)

VELOCITIES OF THE RIVER THAMES AT VARIOUS POINTS.

Position.	Sectional Area.	Daily Flow.	Velocity in Feet per Second.
	Sq. Ft.	M. G.	
Below Sanbury Weir, 1892	698	588	1.54
„ Molesey Weir, 1892	665	510	1.40
Above Bell Weir, 1895	1,047.6	231	.409
Below Staines Weir, 1895	789.5	269	.631

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19,941. Have chemists expressed any opinion, Sir Edward Frankland, for example?—Yes; in a report, which is dated 7th November 1898, Sir William Crookes and Professor Dewar have stated that their constant chemical and bacteriological examinations have led them to the conclusion that no advantage is gained by the rejection of flood water.

See 20,053
-5.

19,942. No advantage?—That is what they said in that report. I am afraid I have not the report here, but I can produce it to you. They cite an instance, I think, in regard to the Lea. But, perhaps, you will allow me just to leave that over for a moment.

19,943. Did Sir Frederick Bramwell and Mr. Hawksley consider that point?—Yes, in their letter of September 20th, 1892, which they wrote to Mr. Fraser and myself, they said: "We think that if the water of the Thames be derived and stored as proposed, and be afterwards filtered in the usual manner, it will be improved, and will be free from any strain due to floods, and we are further of opinion that no sensible deterioration of its quality would occur even if flood water were occasionally pumped into the reservoirs. It would settle and bleach." I think that that opinion has been very much borne out by the researches of Sir William Crookes and Professor Dewar.

19,944. That is a little vague to my mind; what do they mean by "Flood water occasionally pumped into the reservoirs"? They do not recommend pumping of flood water into the reservoirs in general?—No; I see that is so.

19,945. However, you think six days after a flood would make the pumping practically safe?—Perfectly safe.

19,946. (*Mr. De Bock Porter.*) You have referred to only drawing down from the top of the reservoir instead of from the bottom. Would not that require larger reservoirs?—What I meant was that as the water goes down in the reservoir you would draw from the top. You would have sluices at different levels, so as always to draw off from the top level which is available.

19,947. Would you draw them right down to the bottom?—I would draw them right down within an appreciable distance of the bottom.

19,948. Do you think they could be drawn as closely down as Mr. Middleton has said?—I think within 10 per cent., yes.

19,949. (*Major-General Scott.*) Do you think the water within a yard of the bottom would ever be in a good condition to use?—The reservoirs are about 30 feet deep, and when I say leave a residue of 10 per cent. of the depth that would come just above a yard, and I think down to that point as the head of the water went down so the sediment would fall.

19,950. But, of course, the particles of the sediment are more crowded as they fall, are they not. If you have the sediment distributed throughout the water it occupies a certain number of cubic feet of water, but when that sediment is fallen down to within 4 feet of the bottom that sediment is crowded into a very much smaller proportion of water, is it not?—Yes, that would be so.

19,951. And, therefore, the difficulty of passing downwards is very much increased, is it not?—I think that really the sediment altogether forms such a small percentage of the water that there would not be any practical difficulty in the matter. May I just add that I point out that, for the protection of the river and the equalisation of its flow, it is desirable that as much water as possible should be taken from it during the periods of flood.

19,952. (*Chairman.*) Even during this summer of drought has the quality of the water of the water companies fallen off?—Not in the least.

19,953. How does it contrast in the way of colour with the water from mountain sources?—It contrasts very favourably. A comparison of it with such water as the Manchester water, for instance, would testify to the excellence of the Metropolitan water supply. If water of the brown colour which is drawn from mountain sources, frequently seen in northern towns, were supplied to London there would be a great outcry from the consumers.

19,954. Have you any reports from chemists or experts upon the Manchester water as to colour?—No, I do not recollect that I have any before me.

19,955. Have you seen it often yourself brown in colour?—I have seen the Manchester water.

(*Mr. Balfour Browne.*) I see it is mentioned in the report that Mr. Hunter was referring to—a report by Sir William Crookes and Professor Dewar.

(*Chairman.*) The report of November.

(*Mr. Balfour Browne.*) Yes.

(*Chairman.*) I have not seen that

(*Mr. Balfour Browne.*) It is mentioned in that.

(*Chairman.*) What did they say about it there.

(*Mr. Balfour Browne.*) I had perhaps better read the whole paragraph, "It has been shown over and over again in these reports that, as a matter of fact, the bacteriological quality of the London water supply does not depend on the use or rejection of flood water, but upon the proper regulation and the efficiency of the filtration. This has long been conducted, substantially under the supervision of the official water examiner, appointed under the provisions of the Metropolis Water Act, 1871. The direct use of water from the river, during a prolonged flood, depending somewhat on the time of year, may result in the filtered supply containing, in solution, a little additional vegetable matter, thereby slightly adding to the brown colour, but, in our experience, during the last 15 years we have seldom, if ever, known the colour of the London water supply in its most peaty condition, to equal that of the average colour of the Loch Katrine, Thirlmere, or the Welsh lakes." That is the report.

19,956. (*Chairman.*) I suppose that would be an ignorant outcry and objection on the part of the consumers. There is no harm in a peaty colour?—I presume not.

19,957. (*Sir John Dorington.*) It is a matter of taste?—A matter of taste.

19,958. (*Chairman.*) Now there is another matter which, of course, influences the cost of these schemes, namely, the minimum flow at Teddington. I shall be glad to have your opinion about that; what do you say about a minimum flow of 200 million gallons?—The minimum flow of 200 million gallons daily was originally taken by me as the basis of my calculations, because it was the limit fixed by the Thames Conservancy, doubtless upon the advice of their engineer, Mr. C. J. More, in their instructions to Messrs. Marten and Rose (*see Mr. Marten's Evidence (Q. 8,093)* before the Balfour Commission, 1892), for the preparation of their storage scheme in the Upper Thames Valley, and I was naturally desirous to meet the wishes of so important a body, but I have never seen any logical grounds put seriously forward distinctly fixing any limit, and no limit was fixed by Lord Balfour's Commission.

19,959. I think we will take, very briefly, the questions in Lord Balfour's Commission referring to that. I believe there was some evidence by Mr. Birch at Question 7473?—Yes, 7473 and 7487.

19,960. And by Mr. H. J. Marten at Question 8231?—Yes.

19,961. I may as well just read that; it is very short. He said "leaving only 100 million gallons would not

"hurt the level above Teddington"?—And at Question 8246 that "below Teddington Weir there would be some deposit, but it would be swept away as in the Severn by floods."

19,962. (*Sir John Dorington.*) Although it did not hurt the level above Teddington, it is obvious it would stop any flow of the stream there; it would render the stream almost imperceptible, would it not—it would be a pond?—It would stop the stream to the extent it is taken out, certainly.

19,963. (*Chairman.*) To the extent of one half?—To the extent of one half at that special time of the year, but then that is only for a certain time of the year, and all the rest of the year there would be a very much larger flow—in fact, an average of something like 1,300 million gallons going down. Therefore, on many many days the difference between 100 million gallons and 1,300 million on the average would be going down.

19,964. (*Major-General Scott.*) Do you think the slowness of flow would favour the growth of vegetation in the bed of the river at all?—I am afraid that is a question I should not be able to give an opinion upon. It is more a naturalist's question than an engineer's.

19,965. (*Sir John Dorington.*) It is a part of the river very greatly resorted to for pleasure?—Yes.

19,966. And if there were no stream at all it might seriously affect it?—There is no proposition not to have any stream at all; the only proposition is that the minimum might safely be reduced from 200 millions to 100 millions.

19,967. That is rather considerable?—The late Mr. Hawksley said, at Question 7288, "100 million gallons more than at present might alter the level below Teddington by an inch or two," and, at Question 7289, he said, "it would somewhat lower the water level for two or three hours at the end of the ebb."

19,968. (*Chairman.*) We know that Sir Alexander Binnie wants 250 million gallons a day, and the Thames Conservancy desire to fix the limit at 200 million gallons a day?—They have said so. Then I suggest on that, upon the face of these figures, it appears as if Sir Alexander Binnie wishes 25 per cent. added to the flow desired by the Conservancy; but it must be remembered that when 200 million gallons are flowing over Teddington in 24 hours, or 100 million gallons per tide, 1,480 million gallons are flowing at Putney on the ebb of an ordinary tide, and that the difference in the flow at Putney between the Thames Conservancy's and Sir A. Binnie's figures is only $1,480 + 25 = 1,505$, which is to 1,480 a difference of only 1.65 per cent. I am adducing these figures in regard to the scour through London. But the same tide would be running at 4,000 million gallons at London Bridge, and the difference would be only between 4,025 and 4,000 million gallons, or a difference of only 0.6 per cent. Similarly, if only 100 million gallons were flowing at Teddington in 24 hours, or 50 million gallons a tide, the diminution in the tide at Putney Bridge would be only from 1,480 million gallons to 1,430 million gallons, a difference of 3.4 per cent., and at London Bridge from 4,050 to 4,000 million gallons, or 1.2 per cent., a mere "drop in the bucket." The fact is that a difference of 100 million gallons at Teddington makes an infinitesimally small difference in the bulk of the water running through London, the scour being mainly effected, as pointed out by the late Mr. Marten—himself a witness for the Thames Conservancy Board—when the river is running in flood.

19,969. The result of all these figures is, that the addition of Sir Alexander Binnie's 50 million gallons, or your subtraction of 100 million gallons, makes very little difference in the total flow of the river between Teddington —?—And Richmond.

19,970. Between Teddington and London Bridge?—And London.

19,971. But it leaves the objection which Sir John Dorington has pointed out, namely, the effect upon the river above Teddington Lock?—Yes.

19,972. You would get a sluggish and a lower river instead of a lively and higher one?—For the days in which it is necessary to draw down to that amount.

19,973. And those are just the days when people are enjoying themselves on the river—the summer days?—But the large quantity of water coming down at other times of the year cleanses out the river thoroughly.

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Mr. W. Hunter. 19,974. What help is it to a man who is boating on the 5th of July that there has been a flood in January?—What difference has there been, if I may venture to put it so, this year? There has been no difference this year. If you ask anyone who has been up the river, boating this year, I will undertake to say that they will not have found the least difference in the state or condition of the river at all. They would not know whether there were 100 million gallons going down, or whether there were 400 million gallons going down.

19,975. (*Sir John Dorington.*) Rather easier to row up the stream?—Rather easier to row up the stream. While I am on that, perhaps you will just allow me to go a little bit further into this. Mr. More stated, in answer to Question 3632 in the evidence of 1892-93, that "if the total quantity that is authorised, the 130 million gallons, were taken out, it would make a further difference of about one inch and a half. That would diminish as you went down the river, and I do not think down at Hammersmith it would have much effect at all." I infer from that evidence that if a half-tide weir were made at Fulham, any possible difficulty in navigation owing to low water in the river could be obviated, and I have previously shown that the difference between a minimum of 200 million gallons and 100 million gallons is utterly insignificant with regard to the scour through London. I just mention that in passing.

19,976. (*Chairman.*) I do not know that we need go into the causes which have either increased or diminished the scouring of the Thames. I believe that doing away with old London Bridge had a considerable effect upon the flow of the river, had it not?—Yes, my Lord, it had. There was some very interesting evidence given in 1890 by Mr. Henry Law before the Committee of the House of Commons on the Richmond footbridge and lock.

19,977. The removing of old London Bridge caused the river to fall?—It did so. There was a sudden fall in the low water line of from five to six feet.

19,978. And the velocity of the tide was increased also, I suppose?—That was so.

19,979. And that deepened the river by increasing the scour?—Yes; many shoals having been removed, the low water level fell.

19,980. The high water level rose, did it?—Yes, by heaping up. The low water at Richmond Bridge was in 1890 four feet lower than 60 years ago. This is the effect of Mr. Law's evidence.

19,981. Has the Thames Embankment had any effect upon the scour?—No doubt that has increased the scour very largely.

19,982. Indeed, the Rivers Pollution Commission, I believe, attributed the lowering of the river to the removal of old London Bridge?—Yes; in their first Report of 1866 they wrote: "We are convinced, especially by the evidence of Mr. Leach,"—at that time the engineer to the Thames Conservancy Board—"that the lowering of the river is to be attributed, not so much to the loss of water above as to the removal of old London Bridge, and also to the improvement of the channel below."

19,983. Now, do you derive any argument from the experience of this year, for the view you have just expressed about the 100 million gallons being sufficient flow at Teddington?—Yes. No harm was done, and no inconvenience was felt or expressed, when in 1896 the flow at Teddington fell on July 28th to 108·1 million gallons in 24 hours. In this present exceptional year, 1898, when the rainfall for the year ending September 30th has been less than it has been for 82 years the total from January 1st to September 30th being only 44·5 per cent. of the average, not the slightest inconvenience has been felt, and hardly a single complaint has been made to the Thames Conservancy Board as to the quantity of water in the river. Nor is this to be wondered at, seeing that above Teddington Lock, the abstraction of all the water coming down the river, with the exception of that required for lockage, about three million gallons daily, would cause no difference in the appearance and the navigability of the river. Below Teddington the channel is filled up to the high-water line twice every 24 hours by the tidal wave. Seeing that the average flow at Teddington of only 76·98 million gallons in September, with a minimum of 42·3 million gallons on September 13th, has been followed by scarcely a single complaint of inconvenience or damage, it follows obviously, that if that average flow

were raised by 30 per cent. and the minimum flow by 136 per cent., the condition of the river must be improved.

19,984. When you say the average flow raised by 30 per cent., do you mean that this flow of 77 million gallons in September would be raised to 100 million gallons?—Yes.

19,985. That is if there are 100 million gallons to come down?—There has never been any doubt of that. The lowest that has ever come down has been 42·3, plus about 130; about 172 million gallons always going down the river.

19,986. (*Sir John Dorington.*) Under what you are proposing now, you would not have allowed that 135 million gallons which the water companies were taking out to have been taken out on those short days?—Yes they have got the legal power to do that.

19,987. But I am speaking of what you are thinking about doing in the future—that is when you say, that 100 million gallons is always to go down?—100 million gallons is always to go down.

19,988. (*Major-General Scott.*) But no arrangement of yours would prevent it falling to a lower pitch?—Not at all. If the natural flow fell below 130 million gallons, so that the water companies, instead of taking 180 millions, could only take the balance—

19,989. (*Chairman.*) Then they could not take anything?—If it fell anything below 130 million gallons, of course there would be nothing left in the river.

(*Major-General Scott.*) There is nothing to prevent in the future the river falling to below 42 million gallons a day as it has done this year; your arrangements will not prevent that?

19,990. (*Chairman.*) This is 42 million gallons over and above what the companies take, as I understand?—Yes, that is so; that is 42 million gallons over and above what the companies take.

19,991. (*Major-General Scott.*) Yes, but there is nothing in your arrangements to prevent that occurring again from natural causes, is there? You do not propose to put any water into the river?—No, we do not propose to put any water into the river. We propose always to leave 100 million gallons flowing down.

19,992. (*Sir John Dorington.*) You propose that the present arrangement by which the companies take 130 million gallons, although there were only 177 million gallons going down the river, should cease?—No. If the minimum flow in the Thames was arranged at 100 million gallons per 24 hours, there is plenty of storage already provided under present circumstances to allow them to take 130 million gallons.

(*Mr. Pope.*) Not to take.

19,993. (*Sir John Dorington.*) On this 13th of September, there were 42 million gallons running over Teddington weir, and 135 million gallons were being taken by the companies?—Yes.

19,994. That made 177 million gallons?—Yes, quite so.

19,995. And if that were the case on some future 13th of September, the companies would only take 77 million gallons, leaving the 100 million gallons going on?—No, they would not. They do not propose to give up the legal rights that they possess.

19,996. You are suggesting that they should?—No, I do not suggest that they should. I do not suggest that they should give up any legal rights which they possess.

19,997. That was my question, whether you proposed that such regulations should be made that 100 million gallons should always be going over Teddington weir whatever happened, always supposing that there was the water in the river as there was on this occasion. There were 177 million gallons in the river and if the companies took 135, it left only 42 to go on?—Yes, but you see when a scheme of storage reservoirs is properly carried out, there never will be that difficulty.

19,998. (*Chairman.*) Is it part of your scheme that the companies shall not draw any water at all so as to reduce the flow of the river to less than 100 million gallons?—Eventually, yes.

19,999. When their storage is completed?—When their storage is completed.

20,000. (*Major-General Scott.*) To provide storage for the 130 million gallons which they have now a statutory right to draw without any conditions whatever, is that it?—No. A certain storage would be wanted for 300 million gallons from the river, and at present there is a certain storage provided by the companies. As more and more water is taken out of the river, so it will be necessary to provide more and more storage to safeguard the river; and that would be done gradually, as the requirements upon the river became greater.

20,001. (*Mr. De Bock Porter.*) In an exceptional year would you allow the companies to exert their full rights?—Yes.

20,002. Whatever quantity may be going down?—Yes, because it is more important to keep the people supplied with water than it is to leave a large quantity of water running down the Thames.

20,003. (*Chairman.*) A large quantity, but supposing the Thames, instead of being 172 million gallons, were only 132 million gallons, would you allow the companies to take it all and dry the Thames up?—Yes, but I think that is not likely to happen in any way. That is my answer to that.

20,004. (*Major-General Scott.*) Still you do not provide any arrangement to prevent it, that is what I mean?—No.

20,005. (*Sir George Bruce.*) What do you mean by making a minimum limit of 100 million gallons if you do not use it as a limit? You intend ultimately to use it as a limit, I suppose?—Yes, gradually build up the storage.

20,006. Supposing the storage is built up to all you want, is it your idea that then you are not to be allowed to pump any water out of the Thames which would reduce the flow over Teddington under 100 million gallons a day?—Yes, that will be so.

20,007. That is what you mean?—That would be so.

20,008. (*Chairman.*) That happy consummation is only to take place when you have finished your storage?—The storage must be gradually built up to what is necessary.

20,009. Do not make a long sentence about it; it means that?—Yes.

20,010. That is only when the storage scheme is completed?—That is so.

20,011. (*Major-General Scott.*) You are not obliged to maintain the river at 100 million gallons flow?—No.

(*Chairman.*) Not until the storage is completed?

20,012. (*Major-General Scott.*) Not even then.

(*Chairman.*) When the storage is completed, you are not to deplete it below 100 million gallons?—When the storage is all completed upon this basis, yes.

20,013. If it is below 100 million gallons a day, that you do not propose to make good?—No.

20,014. (*Mr. De Bock Porter.*) But you assume that the companies would forego the right which they now have?—I do not think that they would forego anything.

20,015. (*Mr. Balfour Browne.*) I agree?—Or any rights which they now have. But it would be for Parliament to place upon people coming for future supplies from the river such amount of storage that they should eventually get up to the right amount of storage. That was the same thing that was done in the Staines Reservoirs Act. In the Staines Reservoirs Act we applied for power to take so much water from the river, and we had a certain amount of storage placed upon us, and we were not asked then to find any storage for the water which we were then supplying; but possibly—probably—in fact it was so—the amount of storage provided was rather more than would otherwise have been provided if our proportion of the 130 millions had not been taken at the time.

(*Mr. Pember.*) I do not think the witness quite understood you, my Lord. The same restriction which would apply to the last reservoir constructed under the Staines scheme, namely, that you should not take from the river when it was below 100 million gallons, would apply to the first.

(*Witness.*) The same what?

(*Mr. Pember.*) The same restriction, that you should not take from the river below 100 million gallons, would apply to the first as well as to the last.

(*Chairman.*) The restriction now is 200 millions—not 100 millions.

(*Mr. Balfour Browne.*) 230 millions.

(*Sir George Bruce.*) The restriction at Bell Weir?

(*Witness.*) Our restriction at Bell Weir is 260 million gallons.

20,016. (*Mr. Pember.*) I mean the new reservoir?—Which new reservoir?

20,017. That is to be constructed under the scheme?—Yes, probably a similar restriction would be put upon it.

20,018. That is what I mean. You would not have to wait until the whole of the reservoirs were constructed to obey a restriction?—No, it would be gradually safeguarding the river.

(*Mr. Pember.*) Quite so.

20,019. (*Chairman.*) You have prepared some tables as to the comparative cost of the Welsh scheme and the Staines scheme, if I may so call it?—Yes.

20,020. Do your estimates for the Staines scheme agree, or do they differ from those of Mr. Middleton?—They differ a little in details, but practically they are upon the same basis.

20,021. If they differ a little in detail then one of them must be wrong, one would think?—What I mean is that I have taken them out a little differently.

20,022. I see you have prepared a table of the storage requisite for average daily supplies. We have had a table for that from Mr. Middleton, which was handed in at Question 14,936. Is yours a different table from the one we have already had?—Mine is the storage required for an average daily supply under the conditions of 1898, with the daily minimum of 100 million gallons a day at Teddington.

20,023. Then that is the difference. You assume a daily minimum flow of 100 million gallons at Teddington, instead of 200 million gallons?—Yes, that is so.

(*Witness handed in Table. See Appendix M, Table 1.*)

20,024. I will not go through the table in detail with you. What difference does that make now in storage? It makes a difference of 130 million gallons. If 200 million gallons are to go over Teddington Weir, it would require 1,802 million gallons of storage?—Yes, that is so.

20,025. You only require 920, about half?—That is so.

20,026. For an average daily supply of 300 million gallons, Mr. Middleton's conditions bring out a storage of 21,725 million gallons. You bring out a total of only 17,300 million gallons. That gives one an idea of what the differences are between you?—Yes; but I am sorry to say I am afraid I have misled you a little. The figures you are giving are for 1893. Mr. Middleton's figures for 1898 are contained in the table which he handed in at Question 17,774.

20,027. Yours are under the conditions of 1898?—Yes.

20,028. Those are the worst conditions known, are they?—Yes.

20,029. Then the difference is still more startling?—Yes, it is, considerably.

20,030. You only require for an average daily supply of 130 million gallons 920 million gallons of storage, as against 8,314 million gallons?—Yes, that is so.

20,031. That makes your point about 100 million gallons being enough one of the gravest importance?—It is, I quite agree, and that is why I venture to say that the questions relating to the bodies supplying the water are side issues; but upon the proper solution of the question as to the minimum flow at Teddington, depends the economical user of the magnificent natural water supply which the position of London on the banks of a river with the largest watershed in England, should secure to its inhabitants.

20,032. In consequence of something that dropped from Mr. Balfour Browne, which is quite contrary to my own view, is not this theory of yours about the expediency of meeting the future by a storage scheme instead of by a Welsh scheme quite independent of the question of purchase or not?—Quite.

20,033. Whether the companies are in one hand or whether they remain as they are, it equally becomes a question of grave importance whether you are to look

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for the future requirements to the Thames or to Wales?—Certainly.

20,034. I mean it has nothing to do with the question of purchase?—Only indirectly.

20,035. Only indirectly, yes. In fact the cheaper you make out your Staines scheme to be, the more expedient it will be for any public body to purchase, because they will have less to spend in the future?—That is so, I suppose.

(*Chairman.*) You seem each to be arguing for your adversary. You are seeking to make out that the purchaser will have to pay very little; Mr. Balfour Browne is seeking to make out that he will have to pay a very large sum.

(*Mr. Pember.*) That is our candour.

20,036. (*Chairman.*) Then, the difference for the average daily supply of 300 million gallons on the conditions of 1898 is between 17,300 million gallons of storage according to you, and 30,468 million gallons according to Mr. Middleton?—That is so. It is the same table, practically, only treated on a different basis.

20,037. But, then, that makes that basis one of enormous importance as regards cost?—It does, I quite agree.

20,038. It is halving the cost?—It does so far as the reservoirs are concerned, no doubt, in the proportion of the reservoir capacity; there is no doubt about that.

20,039. I see you have got your figure, average daily supply, 307 million gallons?—Yes.

20,040. That requires a storage of 18,346 million gallons?—That is so.

20,041. That would be storage enough, therefore, for the 185½ million gallons that the companies can take now?—Yes.

20,042. Plus an additional supply of 121½ million gallons?—That is so.

20,043. On the other hand, the authorised storage for 185½ million gallons, which is either constructed or about to be constructed, amounts to how much?—6,176 million gallons, which, deducted from the amount of 18,346, leaves the additional storage for the 121 million gallons at 12,170 million gallons.

20,044. (*Mr. Pember.*) That is, supposing we store the whole 130 we are entitled to take?—Yes, that is so. It is practically only deducting the amount of storage we have had authorised or have made.

20,045. (*Chairman.*) On the other hand, we know that that 6,176 million gallons that you call authorised storage is far from being constructed?—That is quite so. But the powers are obtained for it, and it is going on, and there is every intention to go on with it at once.

20,046. Yes, but the cost of that additional storage does not yet figure in the dividend-earning capital of the companies?—Not all of it, only a portion of it.

20,047. Only 866 million gallons?—I think that the three companies under the Staines Reservoirs Act, have already paid money on account of the Staines Reservoir works.

20,048. If the figures we have had laid before us so many times are going to be altered, we must have it definitely in evidence, please. At present we have been told that only 866 million gallons storage have been paid for and provided and completed.

(*Sir George Bruce.*) Yes, and completed. There has been a good deal of the Staines reservoirs constructed, I think, but which is not completed or in use.

(*Chairman.*) I really will not open that controversy now. I must decline to have the whole facts that have been laid before us upset by a side wind in this way.

(*Mr. De Bock Porter.*) There is not one-fourth of the total expenditure sanctioned that has yet been paid up by the companies.

(*Mr. Pember.*) In the Staines reservoirs?

(*Mr. Pope.*) In the Staines reservoirs.

(*Chairman.*) I think we had from Mr. Middleton the figure 866 million gallons over and over again, and we have had it all through—

20,049. (*Mr. De Bock Porter.*) You know the total cost in regard to Staines reservoirs of what is already authorised, do you not?—Yes, the total cost.

20,050. Of the Staines scheme already authorised?—Yes. The total capital we have power to raise is 1,250,000l.

20,051. Has more than a quarter of that 1,250,000l. been already charged or paid?—No.

20,052. Not so much?—No.

(*Mr. Pember.*) I think it is about one-fifth.

(*Mr. Pope.*) About one-fifth.

(*Mr. Pember.*) And they are raising another half million, making three-fifths.

20,053. (*Chairman.*) In the event of purchase, it is most material to distinguish what has not only been authorised, but what has been actually expended?—I agree, my Lord.

20,054. And what has either appeared in the total debenture capital of the company, or in its share capital as dividend-earning capital?—Yes.

20,055. So much of this as does not appear in either of those two categories, figures properly as a deduction?—You will get that better, if I may venture to say so, from the secretaries of the companies who are coming before you.

20,056. That is why I ask you not to upset just by a side wind and in an airy way a figure that has been proved before us over and over again?—I think I was asked the question.

20,057. Have you got out what additional expenditure would be required for an additional daily supply of 400 million gallons?—Yes.

20,058. The storage there, I believe, would be 31,243 million gallons?—That is so.

20,059. And deducting from that the 18,346 million gallons which would give a daily average supply of 307 million gallons you get the additional storage for 93 million gallons at 12,897 million gallons?—That is so.

20,060. Does your table, showing that, vary from the tables we have already had? We have had put in tables that are quite enough for an ordinary mind?—I quite agree, my Lord, I have great sympathy with you, and I should like to cut out any that you could possibly do without.

20,061. I want you to tell me, is there anything essential in your table, is there anything you want to correct in what has been proved before us?—Supposing the storage to be fixed on a basis of a minimum of one hundred million gallons at Teddington, it shows how many days the river would be drawn down below 200 million gallons with a 307 million gallons and a 400 million gallons daily supply. There is also a diagram which accompanies the table.

(*The Witness handed in table and Diagram B. See Appendix M, Table 2; and "Maps, Plans, and Diagrams."*)

20,062. This table seems to be based upon a flow over Teddington Weir of 200 million gallons?—It is except the bottom portion of it. If you would kindly look at the bottom figure for 1898 you will see it is for 100 million gallons at Teddington, and that gives a deficiency of 16,679 million gallons, and then by comparing that with the figures above I get in the third column the number of days on which the river would be drawn down below 200 million gallons at Teddington. You will see that in 1883 there would have been no days upon which it would have been drawn down. In 1884 there would have been 26 days; in 1886 and 1887 there would have been no necessity to draw down below 200 millions at all. In 1887 it would have to be drawn down 17 days to 100 million gallons. In 1888, 1839, 1890, 1891, and 1892 there would never have been any occasion to draw it down below 100 million gallons. In 1893 it would be on 43 days down to 100 million gallons.

20,063. (*Sir George Bruce.*) Below 200 million gallons?—Below 200 million gallons; I am obliged. In 1894, 1895, 1896, and 1897 there would have been no occasion to draw down below 200 million gallons, and of course 1898 speaks for itself—there would have been 91 days down to 100 million gallons. I have taken the same course in regard to the 400 million gallons daily, the result being, that with a 307 million gallons daily supply only in four years out of 16 the river would be drawn down below 200 million gallons at Teddington, while with a 400 million gallons daily supply it need only be drawn down below 200 million gallons in 7 years out of 16. Then I venture to say that a 300

million gallons supply will not be exhausted till 1936. On the tables of Lord Balfour's Commission I urge strongly the desirability of working at present on the 100 million gallons minimum, which has proved satisfactory in 1898, as the limit could at any time be increased when it is found desirable or necessary.

20,064. (*Chairman.*) Why do you say that the experience of 1898 has shown that the 100 million gallons limit is sufficient?—Because there have been no complaints, and no damage has occurred, and the health of the people is as good as ever, and there has been plenty of water.

20,065. But have there been no complaints?—I understood so. The question was put at the Thames Conservancy Board a little time ago, and I think there has been one complaint, or one or two complaints from the penny steamers, which I suggest can be met by the forming of that half-tide Weir at Fulham. Beyond that there has been no complaint at all. I am told that the remark was made at the time that "if we had known you were going to ask for this information we would have seen there had been a good many complaints sent up."

20,066. What were the complaints of the penny steamers—that they went aground?—I think there were one or two complaints of that sort, but that is all.

20,067. Where did they go aground?—That I must ask you to get from another witness. I cannot give you the exact particulars.

20,068. But you volunteered the statement that there had been no complaint and no inconvenience; but a penny steamer going aground is an inconvenience I should have thought?—Practically, no inconvenience.

20,069. (*Mr. De Bock Porter.*) Your second table shows that, as the supply gradually increases up to 400 million gallons, the condition of the river would gradually deteriorate?—No doubt that is so; but, still, I have put it all forward so that you might be able to judge.

20,070. (*Sir George Bruce.*) On that table, what is the meaning of this: "1898: 91 to 100"—91 what?—91 days on which the river will be below 200 million gallons at Teddington, and cut down to 100 millions.

20,071. (*Mr. De Bock Porter.*) With 400 million gallons for a third of the year, it would be drawn down to 100 million gallons?—Yes, that is so.

(*Mr. De Bock Porter.*) 1898 is a year of drought.

(*Mr. Pope.*) Yes, a year of drought.

20,072. (*Chairman.*) In your period of 16 years, from 1883 to 1898 there are seven years in which, for periods more or less long, you would reduce the river down to 100 million gallons at Teddington Weir?—Yes.

20,073. Of course, those are mostly years of drought, I suppose?—Yes.

20,074. How long will the reservoirs already authorised be sufficient, if you take your 100 million gallons limit only at Teddington?—They would last up to 1920.

20,075. (*Major-General Scott.*) That is the 185½ million gallons, is it?—The reservoirs already authorised, amounting to 6,176 million gallons in all, would allow the supply to be taken up to 1920 without drawing the river down below the 100 million gallons limit which I place upon it.

20,076. (*Sir George Bruce.*) What supply would that give to London?—Taking it upon the Report of the Balfour Commission, that would be—

20,077. 300 million gallons from the Thames, do you mean?—No; 203 million gallons I think it is, roughly.

20,078. It is more than that from the Thames that the Balfour Commission allows, surely?—No. Major-General Scott asked me how long these reservoirs would last. They would last up to 1920. I understood you to ask what would be the supply in 1920. The supply in 1920 is a little over 200 million gallons from the Thames.

20,079. (*Major-General Scott.*) And the reservoirs authorised would secure that supply, would they?—They would secure that supply.

20,080. (*Chairman.*) On the conditions of what year?—On the conditions of 1898, with a minimum of 100

million gallons at Teddington. I have a diagram which will give you the information.

20,081. I understand that diagram as meaning that No. 1 reservoir will be requisite as well as the other reservoirs?—It wants to be ready at that time; but it will not have to be drawn from.

20,082. I think we will deal with the Thames Scheme first, and perhaps we had better take your diagram at once. That diagram shows what, in your view, would be the reservoirs that would have to be constructed from time to time?—Exactly.

(*The witness handed in Diagram A. See "Maps, Plans, and Diagrams."*)

20,083. Therefore that scheme presents the advantage of only a gradual expenditure of capital?—That is so.

20,084. This is also based, is it, upon the supposition that the companies or their purchaser are to draw no water from the river when the flow is 100 million gallons, or under?—That is so.

20,085. And you impose that condition upon them from the beginning?—By the time that first instalment is made. I take the quantity of reservoir capacity necessary to supply the total quantity of 300 million gallons, I subtract from that the authorised storage of 6,176 million gallons, and then I say that by the time they are supplying that 300 million gallons (it is really that) they must supply so much reservoir capacity, so as to make it a fair comparison with the Welsh scheme. That was my object in taking that.

20,086. (*Major-General Scott.*) But up to the point of 130 million gallons the companies under your system can draw without any reference to the flow of the river at the time being, can they not?—They can; but, as I say, in giving the future supply from the river the storage will gradually have to be brought up, so as to insure that any given minimum shall be kept at Teddington.

20,087. (*Chairman.*) Could you give us the date at which you propose that there shall be a minimum flow at Teddington, in your calculations?—It would be 1936.

20,088. But not till 1936 the whole Thames may be taken?—No, not the whole Thames; but it will be gradually getting—

20,089. But I will not have "gradually." At what date is there going to be any fixed limit of water flowing over Teddington weir in your calculations?—If you admit and say that 100 million gallons is a sufficiency for the Thames at Teddington, as I think it is, then there is no storage required for the present 130 million gallons.

20,090. You are not answering my question, really. You put in a diagram showing what reservoirs must be constructed from time to time by the companies, or by the persons having the water undertakings in their hands?—Yes.

20,091. What I want to know is, is there to be any minimum flow of the Thames, and, if so, when does it begin?—On the basis that this diagram is made upon, the minimum flow will begin at once.

20,092. Then why did not you say so. You have been saying just the contrary?—It will have to begin at once.

(*Mr. De Bock Porter.*) I understood you to say just now that you did not contemplate the companies giving up the right which they have now for some few years to come.

20,093. (*Chairman.*) You have said it both ways?—It depends entirely upon the minimum fixed at Teddington.

20,094. But that is what we are asking you. Do you fix any minimum, and if so, from what date?—I fix the minimum at Teddington at 100 million gallons from this date.

20,095. Are we to take that clearly?—Yes, that is so.

20,096. (*Major-General Scott.*) Does it apply to the first 130 million gallons?—Yes, it would apply to the first 130 million gallons; no storage would be required for it.

20,097. (*Sir John Dorington.*) With the flow of the river as in 1898?—The flow of the river as in 1898. When I say none, it is just within it. The total deficiency is 837 million gallons.

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20,098. Then you would not exercise the right of taking the 130 million gallons when the flow was only 172 million gallons in all?—But that is upon the supposition that all this 6,176 million gallons capacity is constructed. We cannot make the reservoirs to-day, but these will have to be constructed within a few years.

20,099. (*Chairman.*) Then does it come to this, that your limit of 100 million gallons flowing over Teddington Weir will not come into force until the 6,176 million gallons of reservoir capacity are completed?—That is so.

20,100. I thought so, but you said just the contrary. You said it would begin from to-day?—I beg your pardon. I did not quite understand your question.

20,101. (*Major-General Scott.*) Then it will only apply to the 55½ million gallons in excess of the 130 million gallons, would it not—your restriction will only apply to that 55½ million gallons?—Practically, it will give you the storage necessary to enable the total amount of 185½ million gallons to be taken without drawing the level of the river down below the 100 million gallons at Teddington weir.

20,102. (*Chairman.*) Then I would try and sum it up so that we may have it right. You say, as soon as 6,176 million gallons of storage has been constructed at Staines—?—At Staines or Molesey?

20,103. As soon as that amount of storage has been constructed, the necessary supplies for London up to 1948 can be given by the gradual construction of reservoirs, as shown upon your diagram, always leaving 100 million gallons to flow over Teddington weir?—That is so.

20,104. Or, at least, never depleting the river below 100 million gallons flowing over Teddington weir?—That is so.

20,105. Then, on the other hand, it will take some years, I suppose, to complete that 6,176 million gallons storage, will it not?—Yes, it will take some time.

20,106. (*Sir George Bruce.*) How long?—The Staines reservoirs will be completed in about three to four years' time, I daresay.

20,107. It will take that time, will it?—Yes, I think it will take pretty well that. One reservoir will be ready in about three years, I should think, and the other one about a year later.

20,108. (*Chairman.*) Of the whole 6,176 millions, you have only got 865 millions at present in existence?—Yes. I cannot answer for the others, because they are not under my control.

20,109. What is the meaning of the aqueducts that are shown upon your diagram?—At certain stages in the construction of the reservoirs additional aqueducts will be required, and they are shown at the dates they will be required to be made, and they are also included in the estimates.

20,110. (*Sir John Dorington.*) That is, aqueducts from the reservoirs at Staines or Molesey?—From the river, say, to the pumping station, and pipes into the reservoirs, and an aqueduct back from the reservoir to the works of the companies.

20,111. To the service works?—Exactly.

20,112. (*Mr. De Bock Porter.*) Will the existing aqueducts suffice for the supply up to 18,000 million gallons?—The present aqueduct will suffice up to 1925, on the figures of the Balfour Commission.

20,113. Just about 18,000 million gallon—you have put the second aqueduct in?—Yes.

20,114. (*Chairman.*) Now you have got estimates of cost, I think, of this Thames supply, as shown in your diagram, and there, again, do you agree with Mr. Middleton's, or do you differ?—They are upon exactly the same basis as Mr. Middleton's estimates, but they are set down a little bit differently. It will be seen that the 12,170 million gallons of storage capacity is at 155 $\frac{1}{2}$ per million gallons.

20,115. Will you put your first estimate in then?—Yes.

(*The Witness handed in Estimate 1. See Appendix M, Estimate 1.*)

20,116. (*Chairman.*) This estimate is what? Can you describe it shortly?—It is for the construction of three reservoirs to hold 12,170 million gallons collectively, and to afford a supply of 121½ million gallons daily, with a daily minimum flow of 100 million gallons at

Teddington, based upon the flow of the Thames for 1898.

20,117. That is a very clear description.—It gives a total of 185½ plus 121½, equalling 307 million gallons daily supply from the Thames.

20,118. That leads me to ask you this: You have not estimated at all what the cost will be of providing the necessary storage for the 185½ million gallons, have you?—No, I have not. I have thrown that out of the calculation altogether.

20,119. Quite so. Then you have a number of columns here. You first put down the capital to be raised?—Exactly.

20,120. At the different dates?—Yes.

20,121. Then you add to that, do you, yearly interest?—Yes, it is raised by instalments each year, and I have added in column 4 the yearly interest at 3 per cent. upon the capital each year, upon the total amount expended, which amounts to 45,000 $\frac{1}{2}$. That is at the bottom of the column.

20,122. But you have stopped short at 1920?—Because I take the comparison between the Thames and the Welsh scheme at 1920, and for this reason, because it appears to me to be the fairest to the Welsh scheme. The new quantity, either from Wales or from the Thames, on my 100 million gallons minimum, will have to be ready in 1920, and to do that, the Welsh scheme must be begun 10 years before 1920, and it will be made by instalments between 1910 and 1920. I have added on to the Welsh estimate the accumulated interest up to 1920, for each instalment as it has to be paid, and then I say that is the fairest date, so far as the Welsh scheme is concerned, to make the comparison between my scheme and the Welsh scheme. I do not carry on any accumulated interest beyond the date that the works themselves first come into operation.

20,123. Now I understand?—Then under the Staines Scheme it is being done by instalments, and one reservoir being completed by 1920, we do not want to begin another reservoir till 1921, and the two additional ones—that is, the one to be begun in 1921 and the one to be begun in 1925—are made by instalments. After 1920, as I am comparing the cost at 1920, I charge myself with deferred interest capitalised to add to the cost of the Thames reservoirs at that date. For instance, may I just point out how it works out in the concrete. In 1921, I suppose and presume that it is about 683,000 $\frac{1}{2}$ worth of capital that would have to be paid for the construction of these reservoirs. The interest upon that at 3 per cent. would be 20,490 $\frac{1}{2}$.

20,124. Where are you now?—On column 5—the capital raised in column 2. In 1921 we should have to provide 683,000 $\frac{1}{2}$ worth of capital. In column 5, the interest on that capital would be 20,490 $\frac{1}{2}$, but inasmuch as that has not got to be expended till 1921, and I am taking the cost at 1920, I defer that by the tables, by multiplying it by 0·971, and get a real sum of 19,896 $\frac{1}{2}$, as being the value of that 20,490 $\frac{1}{2}$ at the date of 1920, when I make the comparison, and taking that all in that way I get the deferred interest at the bottom of column No. 7—514,717 $\frac{1}{2}$ —which also is added to my capital value of the cost of the works. Then, in column No. 8, you will see there is the capitalised value of the pumping into store. In column No. 9, the first three figures for 1917, 1918, 1919, give the capitalised pumping charges of pumping the water into the districts, which is cumulative down to that point. After that point, it rises from the quantity at which it had arrived then up to a total amount of 121 million gallons a day, and that I defer in the same way, as I have taken the interest, and I bring it back to 1920—the total capitalised pumping charges amounting to 2,480,695 $\frac{1}{2}$. Then, if you trace these amounts in the estimates, there is the capital value of the works, which comes to 4,075,450 $\frac{1}{2}$; on to that I add 10 per cent. for Parliamentary, law and engineering expenses, because I am comparing it with an estimate, by analogy, which included those expenses. That makes the total capital cost of the works 4,483,000 $\frac{1}{2}$. Then there is the accumulated interest.

20,125. The items of interest you have already mentioned?—Yes, that is all put on, making a total of 8,035,254 $\frac{1}{2}$.

20,126. Let us get it clearly. That is to be the total cost of a daily additional supply of 121½ million gallons?—Yes.

20,127. Over and above the 185½ million gallons already authorised?—Exactly, and including interest during construction and capitalised pumping, both into the reservoirs and also to supply.

20,128. How does that total compare with Mr. Middleton's, can you tell us?—I do not recollect exactly his figure. I do not think he takes it out quite in the same way.

(Chairman.) No; but I suppose it comes to something like the same thing.

20,129. (Sir George Bruce.) There are a good many figures on the estimate which are not in the figures above?—Which?

20,130. For instance, take this 12,170 million gallons storage—1,836,350*l*. There is no such figure on this?—No, I will show you where I got that from. It is on Mr. Middleton's Estimate (c) handed in at Question 17,790. You will see the storage capacity of 28,800 million gallons, at 155*l*. per million gallons stored. It is shown better on Estimate (a), you will see the same—125½ million gallons a day, the storage capacity of 18,000 million gallons, at 155*l*. per million gallons stored.

(Sir George Bruce.) Yes, but I should have thought, looking at it, that the estimate would have corresponded with the figures above.

(Mr. Pember.) So it does.

(Witness.) It does.

(Sir George Bruce.) The total does, but not the way it is made up.

(Mr. Pember.) It is only that he has cut up the 4,483,000, which you see at the bottom of the total capital raised, in No. 3 column, into its details, that is all.

(Witness.) You will find, about half-way down, the amount of 4,483,000*l*.

(Mr. Pember.) The 4,483,000*l*. in column 3 is the 4,483,000*l*. of the estimate, which is made up of all these details, the first of which is 1,836,000*l*.

(Sir George Bruce.) I see it is so.

(Witness.) I have given the details of the estimate.

(Mr. Pember.) Then all the other figures correspond. You get the 45,000*l*., you get the 514,000*l*., you get the 103,000*l*., and the 2,889,091*l*., and the pumping charges to supply capitalised.

20,131. (Sir George Bruce.) What is this 2,480,695*l*.?—That is added to the pumping charges in column 9. You will see 408,396*l*. The two together make 2,889,091*l*.

20,132. (Mr. Pember.) Where are those items of 131,000*l*., 136,000*l*., and 140,000*l*., making 408,000*l*. altogether, which bring your figures up from that 2,400,000*l*., which Sir George Bruce mentioned, to 2,889,091*l*., and which appears to refer to years before the reservoirs were formed?—Because the 185½ million gallons is pumped in 1916, and we have to pump a certain quantity from 1916 up to 1920: therefore, I put the cost of that pumping in without deferring it. It is a charge which we have to meet.

20,133. (Chairman.) It is extraordinarily difficult to compare any of your estimates with Mr. Middleton's, because, for some mysterious reason, you never take the same quantity to be supplied?—I have got them as nearly as possible to meet the 121 millions and the 93 millions from Wales.

20,134. As far as I can make out these are the conditions of 1898, are they?—These are the conditions of 1898.

(Sir George Bruce.) Mr. Middleton's estimate corresponding to your 8,035,254*l*. appears to be 9,290,328*l*.

(Chairman.) Where have you got that?

(Sir George Bruce.) It is Estimate (a), handed in at Question 17,790. There is an estimate in the note at the bottom of that estimate, making it 8,419,798*l*.

(Mr. Pember.) Quite so.

(Chairman.) Mr. Middleton did not capitalise pumping.

(Witness.) Mine is upon exactly the same basis for works, with the exception that I have found an aqueduct was not required quite so soon, but otherwise it is on the same basis as to works, but I treat the figures a little differently, and include capitalised pumping, which, I understand, you thought ought to be included to make a fair comparison.

20,135. We asked Mr. Middleton whether it ought not to be included. We have expressed no opinion of our own. However, notwithstanding all that, you make out a less figure than Mr. Middleton did?—Yes, because I have got less storage.

20,136. Yes, that is 100 million gallons?—Yes. That is where the main difference comes in.

20,137. (Sir George Bruce.) Mr. Middleton did not capitalise his pumping, but he charged the whole cost of pumping for the whole 20 years, he did it in that way?—Yes.

20,138. (Chairman.) That is your only estimate for the Thames scheme, is it not?—No, there is Estimate 3, which carries the supply up to 400 million gallons, but it is practically made up in exactly the same way. I think you will scarcely need any explanation of it after the explanation which, I hope, I have conveyed in regard to the first estimate.

20,139. This is going on up to a supply of 400 million gallons?—That is so.

20,140. Will you kindly put that estimate in?—Yes.

(The Witness handed in Estimate 2. See Appendix M, Estimate 2.)

20,141. The total estimate there is 7,000,000*l*. odd?—Yes.

20,142. That is in addition, I suppose, to the 8,000,000*l*. before?—That is so.

20,143. We will come to the summary presently. Now, you have estimated, I believe, what in your view will be the expense of the Welsh scheme?—Yes, I have taken it by analogy in the same way that Mr. Middleton did.

20,144. I do not know whether you heard the questions that were put to Mr. Middleton this morning, suggesting that the Thirlmere, Vyrnwy, and Elan Valley works were totally different in their conditions. Were you here?—Yes, I was.

20,145. Have you examined those works?—No, I have not. I have taken the view that generally it is very difficult of course to estimate any of these works, without having working drawings and making a proper survey and making drawings of the reservoirs, and getting at the value of the land, and, therefore, I think, that Sir Alexander Binnie is quite likely to be mistaken in the view which he takes in regard to this estimate; and, if I were sitting upon a board of directors and had to consider an estimate brought up to me, and I found that one engineer proposed to make a railway, or proposed to make some other work which came to about one-third, or half the cost of other work done by other engineers equally eminent, I should naturally say, "Well, my friend, I have no doubt you are perfectly honest in this report that you put forward, but I think you are mistaken, and until you prove to me that my estimate by analogy is wrong, I shall rather work upon the estimate by analogy than upon an estimate which, I think, you have not quite sufficiently considered."

20,146. But an estimate by analogy, I understand, is admittedly inferior in accuracy to an estimate taken upon a good survey, is it not?—Yes, that would be so.

20,147. Therefore, you are going to correct an estimate made upon good materials by an estimate made upon misleading materials?—I do not quite think that. I cannot see why one set of works should cost so very much less than three other sets of works which have been made under very similar conditions.

20,148. But are the conditions similar? You say you know nothing about the condition of Elan, Thirlmere, and Vyrnwy?—I know the quantity that is going to be supplied, and I know the length of the aqueduct.

20,149. That is only two of the conditions, is it not?—Exactly; and I also know Mr. Middleton's statement in evidence that the embankment is very much longer and very much higher in the case of the Welsh scheme than another which he cited. Therefore, taking it altogether, I have come to the conclusion that I think the estimate by analogy is the best one that I can take.

20,150. (Sir John Dorington.) Is the character of the country to be traversed similar?—I have not seen it; and, therefore, I should not like to say, but one knows generally what the character of the country through England is; and I should think that there is not very much difference in regard to that. I may say that my original report was written in 1893, and was deduced from other estimates that had been placed before

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different people at different times—Mr. Hemans, Mr. Hassard, and Mr. Fultan—on the Vyrnwy Scheme, and the Thirlmere Scheme; and very strangely I made out that the cost of bringing to London from a distance of 180 miles the 215 million gallons of water per day, in addition to the present supply of 90 million gallons per day from the Thames, would be about 80,150,000*l.* That was written in 1892, quite irrespective of the inquiry which you are holding here, and at the same time that was confirmed by Sir Frederick Bramwell and Mr. Hawksley in the letter to us of the 20th September 1892, which has been already referred to.

20,151. (*Chairman.*) Then I do not understand why your Welsh estimate should differ from Mr. Middleton's at all?—It does not materially differ.

20,152. Not in any respect?—I think not.

20,153. Then we need not put them in, need we? You simply confirm his estimate of the Welsh Scheme?—That is so.

20,154. Both as to the cost of bringing in 121 million gallons, and the cost of bringing in an additional 93 million gallons a day?—Yes.

20,155. Has Mr. Middleton put it in that shape?—I am not quite certain of that.

20,156. (*Mr. Pember.*) I do not think Mr. Hunter goes quite so far in the calculation of interest, he does not go over so long a period as Mr. Middleton?—I deal with them a little differently.

20,157. Then put in those estimates?—Yes.

(*The witness handed in Estimates 3 and 4. See Appendix M, Estimates 3 and 4.*)

20,158. Then you have summarised in your Estimate 5 the cost of the Welsh and Staines Schemes, I think?—Yes.

(*The witness handed in Estimate 5. See Appendix M, Estimate 5.*)

20,159. With the result that Wales is to cost for 121 million gallons daily supply, 20,600,000*l.* odd?—The total cost, including all charges, is 23,878,448*l.* in the right-hand column, and the second quantity is 13,290,717*l.*, or a total of 37,169,165*l.* The Thames Scheme, under the conditions of 1898, and with a minimum flow of 100 million gallons over Teddington Weir, cost a total sum of 15,499,111*l.*

20,160. (*Sir George Bruce.*) That is only 214½ million gallons a day?—Additional. That comes up to 400 million gallons altogether.

20,161. Additional to what?—To 185½ million gallons.

[Adjourned till to-morrow morning at 11 o'clock.]

FORTY-FIRST DAY.

Tuesday, December 13th, 1898.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Honourable JOHN WILLIAM MELLOR, Q.C.,
M.P.

Sir JOHN EDWARD DORINGTON, Bart., M.P.

SIR GEORGE BARCLAY BRUCE, Kt., C.E.

ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.

ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.

Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.

Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.

Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. WALTER HUNTER recalled and further examined.

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20,162. (*Chairman.*) I think the last estimate we put in yesterday was your summary of the cost of the two schemes?—Yes. It is a general comparison of the schemes.

20,163. I gather from the tables that you have already put in, that you think the Welsh Scheme is not needed, at least at present?—That is so.

20,164. (*Mr. De Bock Porter.*) But are you of opinion that, if needed at all, it would be desirable to take any steps to secure an area?—That is almost going beyond an engineering opinion. I think that it might be desirable in the interests of London to secure an area, supposing that it may hereafter be wanted.

20,165. Then you are not of opinion that it will never be wanted under any circumstances?—That is a very difficult question to answer. That depends upon the

real growth of London. Some people think London will not increase in the future, as it has not done in the past, and therefore, that it will never be wanted at all. The view that I have generally taken in regard to the utilisation of the Thames, or taking water from a distant watershed, may be summed up somewhat in this way: We have a river at our feet, which, at any rate, has an average flow of something like 1,300 million gallons a day, and it is suggested that we should go to Wales, and open up a supply from an area or watershed which at the most will give, according to the evidence of the promoters, 415 million gallons a day.

(*Mr. Balfour Browne.*) That is after compensation?—Yes, after.

(*Mr. Pope.*) Therefore, that amount will be available for use?

(Witness.) It has always seemed to me that upon the first intention of the promoters of that scheme they proposed originally to discard the Thames and the Lea and to go to a distant watershed for water. What would happen? The 415 million gallons a day would be used up within a certain definite period, and then, having incurred all the expense of bringing that water from Wales or from elsewhere, they would have to come back to the Thames, which previously they had affected to despise, and make up the additional water which would then be wanted from the Thames. I have always felt, therefore, that it is really a question of expense between the two schemes, and that if the Thames can be developed and give good water, as it admittedly does, at a less expense than the Welsh Scheme, it is folly and absurd to go to a distant watershed until you are compelled to do so.

20,166. (Chairman.) Yes, but if you put it off too long, what then? That is Mr. De Bock Porter's suggestion to you?—I have answered Mr. De Bock Porter's suggestion.

20,167. If you put it off too long, you may lose your areas altogether?—Yes, that is so.

20,168. (Major-General Scott.) Of course, what has been put before us on the other side of the question has been that the future of the Thames Valley is, to a certain extent, uncertain, and that if the population was to grow to a very considerable extent, if it became to a large extent a manufacturing population—there are already some few factories there—but if that kind of growth largely increased in future years, the Thames would become more or less unfit for use. That is one side of the question that has been put before us; what do you say to that?—I am not a prophet, and, therefore, I cannot say what will happen.

20,169. But that bears on the question of the acquisition of an area to fall back upon in the event of such a thing happening?—I agree.

20,170. (Mr. De Bock Porter.) There is one other question I should like to ask you. I understood you were a member of the London County Council, and represented the County Council upon the Lea Conservancy Board?—I did.

20,171. From your experience there, do you think that your proposal with reference to the 100 million gallons limit is likely to commend itself to the Thames Conservancy?—A similar question scarcely came up in regard to the Lea. Of course, in regard to the Lea, the companies have the right to take all the water down to the 5 million gallons a day which is reserved for the navigation. I should certainly not propose to make any similar proposition for the Thames, but I think that for an exceptional year like the present, the 100 million gallons limit which I have suggested would be sufficient. What the views of the Thames Conservancy may be I am not in a position to say.

20,172. You do not consider the position of the Lea during the past year to have been an ideal one?—No, not ideal, but practically it has had no effect upon the health of the population, and has not given anyone any trouble at all, except the companies in having to pump up water to keep the river going.

20,173. But the Lea is not used, of course, in the same way that the Thames is—for pleasure purposes?—No, it is not; but I have lived in the East of London for a great many years, and I have never noticed that there has been any less healthy population in that neighbourhood along the banks of the Lea than elsewhere in the Metropolis, in fact, the death rate is very low in the Poplar district.

20,174. (Sir John Dorington.) Is not the condition of the reaches of the Lea, which are used for navigation, always offensive?—No, not always offensive.

20,175. Not always offensive?—Really, I do not think that for a great many years I have noticed any offence from it at all. Sometimes, if some of the neighbouring sewage works let their storm overflows run into it, then it would be offensive for a short time.

29,176. But that is quite at the lower end?—Quite.

20,177. (Mr. De Bock Porter.) You would hardly consider those provisions made by pumping up water for navigation purposes desirable, I suppose?—No, not as a permanency.

20,178. But they have been necessary during the past year?—Yes, they have been.

20,179. You would not like to see the Thames come down to that condition?—No, I should certainly not.

20,180. (Chairman.) You see you have made your 100 million gallons limit, not the resource for abnormal years, but the rule in every year?—Yes, but in most years it would not be necessary to draw down to that minimum.

20,181. I suppose it would affect all your estimates considerably if the arrangement made was that the normal amount of water should be 200 million gallons, with a power of creating an exception in an abnormal year and reducing the flow to 100 million gallons?—I thought possibly you might ask that question, and also I wanted to show the difference in the cost between 100 million gallons minimum and 200 million gallons, therefore, I have provided myself with estimates giving you the information which you are asking for.

20,182. Will you kindly hand in these estimates then?—Yes. These estimates are for storage upon the minimum flow at Teddington of 200 million gallons daily under the conditions of 1893, which conditions would cover every year of which we have any knowledge except 1892. Then I have also got estimates for a 200 million gallons minimum flow at Teddington under the conditions of 1898, made up in exactly the same way that the other estimate which I explained to you yesterday was made up.

(The witness handed in Estimates 6, 7, 8, and 9. See Appendix M, Estimates 6, 7, 8, and 9.)

20,183. Yes, but I do not know that either of those meet the state of things that I was suggesting to you, namely, that the 200 million gallons should be the rule, capable of suspension by some authority or other, in cases of emergency; do you see what I mean?—Yes.

20,184. If such a year as 1893 or 1898 came on again, then you might sink your limit to the 100 million gallons, but in normal years leave it at 200 million gallons?—Quite so. Then you might take a little off my estimate of 1893 and reduce it a little. I could give you an estimate upon a normal year giving 200 million gallons at Teddington, if you would like to have one.

20,185. What is the contrast, or what is the difference between your estimate 6 and 7?—I sum it up in this way. It will be seen that the Thames Scheme for the supply of 121.5 and 93 million gallons daily under 1898 conditions, with 200 million gallons minimum daily flow at Teddington, will cost 3,773,695*l.* more than under the same 1898 conditions with 100 million gallons daily minimum flow; and also that the Thames Scheme for the same quantities under 1893 conditions, with the same minimum flow of 200 million gallons, will cost 2,128,369*l.* more than with a minimum flow of 100 million gallons daily at Teddington. All these estimates, together with the one for 100 million gallons, are compared on Estimate 10, which I should like to put in.

20,186. Please, put that in then?—Yes.

(The witness handed in Estimate 10. See Appendix M, Estimate 10.)

20,187. There you compare the Welsh Scheme with the Thames Scheme under the conditions of 1898, with a minimum flow of 200 million gallons?—Yes.

20,188. And you compare the Welsh Scheme with the Thames Scheme, under the conditions of 1893, with a minimum flow of 200 million gallons?—If you like, I will also prepare a statement taking a normal year with exceptions for 1893 and 1898; I mean if it would be of any use to you.

(Chairman.) I do not think we will trouble you.

20,189. (Major-General Scott.) Of course, Mr. Hunter, whatever may be the limit fixed to which the Thames is to be depleted, there will be a tendency to reduce it to that limit, because it would be, I think, always, in the view of the companies, desirable to gravitate the Thames water to Hampton, rather than to first lift it into the storage reservoirs, and then gravitate it?—That would be so, no doubt, and, therefore, it would be desirable, possibly, for you or any gentleman holding the responsible office which you hold, to see that the scheme was fairly carried out, and that the river was not depleted below what was necessary. I think the companies would be pleased to consult with you upon such a matter as that.

20,190. Then if the companies assume the power to take the water out of the river down to a limit of

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Mr. W. Hunter. 100 million gallons a day, what right would anybody have to interfere with that, seeing that it had been sanctioned by Parliament and fairly put forward and examined?—Of course, that is a detail which would have to be considered.

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20,191. (*Chairman.*) It should rather lie upon the companies to make out that it was necessary to go below the limit of 200 million gallons before some independent authority?—I think that is a very fair suggestion, if I may venture to say so.

20,192. (*Mr. De Bock Porter.*) We assume that your position is that you are here as a representative of the companies, and you are putting forward this 100 million gallons limit as a scheme which they would like to adopt?—I put this forward as a scheme on my own responsibility as an engineer. I have no doubt they would approve such a scheme, but I cannot say that I have their direct authority to say so.

20,193. Still, you appear as representing the companies collectively?—I do.

20,194. And this is a definite proposition which you put before us—

(*Mr. Pope.*) I am afraid, sir, in reference to the question you have put, I must say we are not instructed definitely as to the opinion of the companies, that is to say, to the extent that the 100 million gallons would be accepted by them in place of their present unrestricted right to 130 millions. You put the question very properly, whether Mr. Hunter would prefer a permanent restriction to 100 million gallons, which would affect the whole river, including the present authorised 130 million gallons. We have not considered that, although Mr. Hunter gives his opinion, and it would weigh very strongly with us, no doubt, and I may say, speaking for myself personally, it does not seem to me an unreasonable suggestion. Still, we have not considered it in the sense in which I could say the companies are agreed upon the matter.

(*Mr. Balfour Browne.*) Mr. Hunter did not intend to give away any of the rights of the companies. He said so, distinctly, yesterday.

(*Mr. Pope.*) I think he did suggest that it would be a fair compromise if the 100 million gallons were made applicable to the whole river irrespective of the present authorisation to take 130 million gallons. To that extent we have not considered it; we have not proposed to give up any of our absolute rights over the 130 million gallons, but that is, of course, out of our control; it is entirely a matter for your consideration. Staines has a limit.

(*Chairman.*) Yes it has.

20,195. (*Mr. Pope.*) For the first time, in the Staines Act, was introduced the question of the limitation upon the power of drawing from the Thames, which is not the case with regard to the original powers of the companies. (*To the witness.*) I think you would desire not to put it beyond what I have put it at, namely, that it is a matter which has not received the consideration of the companies, and has not been agreed to by them; but you put it forward as your own suggestion of what would be a fair thing under the circumstances?—Yes, I think that is practically what I answered to Mr. De Bock Porter. It is my opinion.

20,196. (*Chairman.*) In the estimates you have put in of the cost of the Welsh Scheme, I have not seen that you have taken any account of a sinking fund charge?—I have considered that point.

20,197. The patrons of the Welsh Scheme, if I may say so, are the London County Council, and they would only put it in force if they were the purchasers of the whole of the companies, and they would probably be obliged to have the sinking fund—I cannot tell, but Parliament would probably oblige them to have it?—Taking the comparison between the Welsh Schemes and the Thames Schemes, on Estimate 5, and bearing in mind that municipalities are generally required to repay capital in sixty years, the following figures show the additional annual cost of the Welsh Scheme as compared with the Thames Scheme during sixty years, from 1920 and 1936 respectively. For the period from 1920 to 1980, and for the first quantity of 121·5 million gallons the Welsh Scheme works out as follows:—Annual interest on 23,878,448*l.* at 2½ per cent., 656,657*l.* a year; the annual sinking fund to repay capital in sixty years at 2½ per cent. being 157,597*l.*, making a total of 814,254*l.* In the Thames Scheme there would be the annual interest on

8,035,254*l.* at 3 per cent., making 241,057*l.* Deducting this latter sum from the 814,254*l.*, the additional annual cost of the Welsh Scheme from 1920 to 1980 for the first quantity of 121·5 million gallons daily would be 573,197*l.* a year. For the period from 1936 to 1996 for a second quantity of 93 millions daily, the Welsh Scheme would be as follows: Annual interest on 13,290,717*l.* at 2½ per cent., 365,494*l.*, and the annual sinking fund to repay capital in sixty years, at 2½ per cent., 87,718*l.*, making a total of 453,212*l.* for the second quantity. On the Thames Scheme there would be the annual interest on 7,463,857*l.* at 3 per cent., amounting to 223,915*l.*, leaving the additional cost upon the second quantity for the period 1936 to 1996 at 229,297*l.* annually. The total additional cost of the Welsh Scheme, therefore, is 802,494*l.* annually. Summing that up, it will be seen that upon Estimate 5, the additional annual cost of the Welsh Scheme will be as follows: from 1920 to 1936 573,197*l.* per annum; from 1936 to 1980, 802,494*l.* per annum; and from 1980 to 1996, 229,297*l.* per annum.

20,198. That last period you have not given in detail?—That is shown, but you see the periods overlap.

20,199. You have just given us how you make out the extra cost of the Welsh Scheme for the period from 1920 to 1980 for the first quantity, and then the period from 1936 to 1996 for the second quantity, but the third quantity, from 1980 to 1996, comes in here for the first time?—They are spread over different years. They partly overlap each other. The first period is from 1920 to 1980, and the second from 1936 to 1996. From 1920 to 1936, you only get a certain amount, 573,197*l.*; and from 1936 to 1980 you get the sum of the two amounts, from 1920 to 1936 and from 1980 to 1996; from 1980 to 1996, it is the smaller amount, as stated. Then it is only fair to say, of course, that the Welsh Scheme, having had the sinking fund applied to it, the expense would cease at that time. Therefore, if it be deemed right for the purpose of making a fair comparison, that an annual sinking fund charge should, for this purpose, be added to the annual interest chargeable upon the Thames Scheme, this sum will amount upon the cost of the first quantity of 123·5 million gallons daily supply to 53,032*l.* per annum, and upon the cost of the second quantity of 93 millions gallons daily supply to 49,261*l.* per annum. Taking these into account, the additional cost of the Welsh Scheme for the same quantities of daily supply then becomes from 1920 to 1936, 520,165*l.* per annum; from 1936 to 1980, 700,201*l.*, and from 1980 to 1996, 180,036*l.* Then, I may just mention that a rate of one penny in the £ upon 36,434,277*l.*, the rateable value of the county of London, which will come into force on April 6th next year, will produce 151,809*l.* Of course, in the period that we are considering, the rateable value will be increased, and I only give that as information that you may take into consideration, and also that the sum is spread over rather more than the county of London itself.

20,200. (*Mr. De Bock Porter.*) You take 60 years as the term for the sinking fund; that is not the longest term up to the present conceded by Parliament, is it?—I thought it was, and that is why I took it at 60 years.

(*Mr. Pope.*) There are some exceptions.

(*Mr. De Bock Porter.*) I thought there were some exceptions.

(*Witness.*) Of course, if there is an exception, then that must be considered. I thought it was the longest term, and therefore I put it at the largest amount. But I do not wish in any way to overstate the thing.

(*Mr. Littler.*) I do not think, my Lord, that there is anything more than 60 years, since the Standing Order. I am speaking subject to correction, but I do not think there is anything longer than that since the Standing Order.

(*Mr. Pope.*) I think there was one case in which the Standing Order was modified in favour of a longer period.

(*Mr. Balfour Browne.*) I know that there are old cases where 100 years was continually granted.

(*Mr. Pope.*) Yes, that is so.

(*Mr. Littler.*) Before the Standing Order, undoubtedly.

(*Chairman.*) I think we have all those cases on the notes, somewhere in this enormous volume.

(*Mr. Pember.*) I can tell you where it was done—in the case of Sheffield.

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(Mr. Pope.) I thought it was done in Sheffield.

(Mr. Pember.) That was on account of the bursting of the reservoir.

(Mr. Pope.) That was long before the Standing Order. I am not sure whether there are not other cases, but my recollection is so imperfect that I had better not mention names.

20,201. (Chairman.) I am a little puzzled, Mr. Hunter, but the figure which you have just given us of the additional cost of the Welsh scheme, namely 802,494*l.*, includes both the 573,197*l.*, and the 229,297*l.*?—That is right.

20,202. It is the sum of the two?—It is per annum, you know. It is additional annual cost of works.

20,203. Yes, I know it is per annum?—Then from 1920 to 1936 the additional annual cost is only upon the first part of the scheme, 573,197*l.*

20,204. Yes, but in the figures you have just given us that was stated to be the annual additional cost from 1920 to 1980?—I analysed them at the end; I gave the cost of the two periods.

20,205. I am drawing your attention to that very fact. But your first figure of 573,197*l.* purports to cover the period from 1920 to 1980?—For the first quantity of 121·5 million gallons daily. Then the second quantity is from 1936 to 1996; and from 1936 to 1980, a period of 44 years, there is a double annual charge until the 573,197*l.* ends in 1980.

(Mr. Pember.) It is wiped off.

(Witness.) Do you see that now, my Lord?

(Chairman.) Yes, I do, thank you.

20,206. (Mr. De Bock Porter.) In 1980 the whole of the capital will have been wiped off?—It will. I mentioned that just now, and, therefore, for your consideration I gave the other comparison, including the sinking fund upon the other, which is the fairer comparison between the two, granting a sinking fund for the Thames Scheme.

20,207. (Chairman.) Then in what period will the Thames Scheme cost be wiped off by the sinking fund charge you have just suggested?—At the same period that the Welsh Scheme will be.

20,208. I do not know that we need ask you much about topics that are not engineering topics; but you say you have been on the London County Council yourself?—I was.

20,209. Does your experience on the London County Council lead you to think that a body of that kind is likely to administer well such an undertaking as those of these water companies?—I think that in regard to the directors of the water companies, they are, to a large extent, a permanent body, and therefore they gain an insight into matters connected with waterworks' economical administration, which is very valuable, while necessarily, upon a public body the Committees are more ephemeral, they are appointed for a certain time, and they are larger, as a rule, than boards of directors, and therefore they are not so efficient in administering works of this description. For instance, Parliament could not very well carry on the work of the State—it delegates its duty to a cabinet of fifteen members; and when you get large boards, I am convinced that you do not get that rigid inquiry into everything that you do with a smaller board where there is a greater sense of responsibility.

20,210. Have you ever managed any waterworks which were in the hands of a corporation or of a municipal body?—No, I have not. That is only my general view upon the matter.

20,211. Have you considered the variation of rates in London between the different water companies?—To this extent: I think that Parliament has wisely exercised its judgment in providing for different rates of charge in the different districts of the companies. For instance, a house in the Grand Junction district with a rateable value of 150*l.* per year, would be charged a water rate of 4 per cent. per annum; a house of the same size in the East London district would probably have a rateable value of not more than 75*l.* per annum, and would be charged at the rate of 5 per cent. per annum. In either house, probably, the same number of persons would be living, and the same quantity of water consumed; and it is therefore manifestly fair to my mind that the East London Company should be able to charge at a higher rate than the Grand Junction Company.

The rates, moreover, in the several districts have been settled by law, and have been taken into consideration where the property has been bought or let on lease, and are really a charge on the owner, who alone would ultimately reap the benefit.

20,212. You see now you are justifying an increase in the percentage charge by considering what amount of supply is furnished to the house?—Yes.

20,213. On the other hand, you know that the contention of the companies is that, even if their supply ceases altogether, they are entitled to go on charging—that they are not sellers of water?—They are no different in that way from the corporations. The corporations do not give up their rates. At the time of that great frost in 1894-5, which I think was—we know that—all over the country, the municipal works were just as badly attacked by the frost as the companies' works, and I think you will find that they did not remit the rates which they had a right to take.

(Mr. Pember.) Rather the other way I think it was, my Lord; they did propose in some cases to increase the rates in order to pay for the damage done.

(Mr. Balfour Browne.) I do not think there is a single case, Mr. Pember, not one. I do not admit what Mr. Hunter says; and certainly not what you say.

20,214. (Chairman to witness.) Are you aware of any case of that sort?—No, it is only from what I understood all through.

(Mr. Balfour Browne.) I know of only two cases, my Lord, where corporations have increased the rates. One was Rochdale, because of the very untoward circumstances connected with the dam; and the other was a case Mr. Pope knows—that of the Bury Corporation last year. There, although they sought to increase their rates, the Bill was afterwards withdrawn. It was not on account of the drought at all.

(Mr. Pope.) Parliament did sanction that increase.

(Mr. Balfour Browne.) It did, but it was not on account of the drought or the frost.

(Mr. Pope.) No, not at all.

20,215. (Chairman to witness.) There does strike my mind as being a little consistency in the argument you have just presented to us. You say the East London is entitled to charge a higher percentage, because a house of the same size in another London district is rated lower, and, therefore, they only get for the same supply of water an equal amount on their higher percentage charge?—Yes.

20,216. You therefore make use of the amount of the supply as justifying the increase of charge, but if the supply stops altogether, you say they are still to receive the same charge; there seems to me a little inconsistency there?—I think it is the charge per cent. for the whole district. The same argument would apply to both districts. What I mean is that in making a different charge per cent. in the two districts, it is right to take the special circumstances of the district into account; otherwise it would not be worth anyone's while to supply water to that district. If you had to supply a very poor district without a rich district as well, it is manifest you must supply on a slightly higher basis in order to get a return for your capital.

21,217. Then if you put all these undertakings into one hand, you could average the charge over the whole districts?—Then I think those who are paying the lesser charge would grumble very considerably.

20,218. (Mr. De Bock Porter.) Do you not think that it is a little unfair in cases where the houses are of equal annual value—take the Lambeth and the Southwark and Vauxhall Districts which are close, side by side, and where a 50*l.* house, or a 30*l.* house in one district is the same as in the other—that they should be paying such differential rates for the same accommodation?—It seems an anomaly.

20,219. (Chairman.) You have just suggested to us that it is not the same accommodation—that the 50*l.* house in East London is a larger house with more inhabitants and consuming more water than the 50*l.* house in the Grand Junction District?—Yes. I simply wish to say that there is a good deal to be said on both sides of the question—that is really it, and I am sure it will receive your consideration, that is my view.

20,220. (Mr. De Bock Porter.) But do you think that the landlord is the only person who pays the difference?—I think that all these matters are taken into consideration when people take their houses. They say:

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Mr. W. Hunter. "What is the water rate?" "What are the rates?" "What are the general rates?" "What is the total value?" "What shall I have to pay as a total amount?" And that to some extent regulates what they do.

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20,221. (*Sir John Dorington.*) You would say, in fact, that a capitation charge for water, if it could be levied, would be the fairest way of dealing with it; but as that is impracticable, the only way is to put a higher charge on the rateable value of a house in one district than in another, because the number of persons who inhabit that house, we will say, at 100*l.*, will be greater in one case than a house of 100*l.* rateable value in another?—Yes, I think that that should be taken into consideration in considering the matter.

20,222. In fact, that the rateable value is a clumsy way of levying the charge, but the most practical way?—It is a practical way, and, with differential rates, a fair way.

20,223. (*Mr. De Bock Porter.*) And not wholly disadvantageous to the companies?—Well, it acts both ways, I suppose; it may act either way.

20,224. They have all the benefit of the increased rateable value?—Yes, they have.

20,225. It goes up with the revaluations?—Certainly, and they have very much heavier rates to pay in consequence of their own works.

20,226. But not in the same proportion?—They are very large rates indeed. I think that is brought out somewhere or other. The addition in the rates during the last 30 years is something enormous.

(*Mr. Pope.*) 200,000*l.* a year the companies pay, we were told yesterday.

20,227. (*Chairman.*) The fairest way of all, but I suppose that would not suit the companies, would be payment by meter?—Payment by meter, with a rate, would be, in my opinion, the best way of charging. That is to say, I should like to see that when people took more than a certain quantity of water they ought to pay a little more for it, so as to make each man his own waste inspector. It is a difficult subject, and I have not gone thoroughly into it, therefore, I only throw out the suggestion.

20,228. But the companies would not like supply by meter, would they?—It would depend entirely upon the price they are getting.

20,229. But I mean any price they are likely to get per thousand gallons would not produce anything like their present percentage on the rateable value rising at each quinquennial valuation?—That is why I say a rate with a meter charge above a certain amount.

20,230. (*Mr. De Bock Porter.*) In some districts of London, at the present time, I believe the companies are receiving nearly double the amount they did some years ago, with exactly the same supply?—That, really, I have not looked into, and, therefore, could not say.

20,231. But you think it possible?—I really do not know.

20,232. (*Chairman.*) As we have you here, I will put this to you: I do not know whether you have any suggestions to make to us on the subject of the control of the companies?—I see no reason for any control beyond giving a right to the Water Examiner to enter the works of the companies, instead of by courtesy. I think there would be not the least objection to that.

20,233. Is not the most important part of control to see that each company is making due provision for the future by storage reservoirs or other works, including even such a thing as going to Wales?—Yes, that would be a very important part of the control.

20,234. Do you conceive that that sort of control could be applied to the companies, if they remain in existence? Can you conceive any system by which a company could, by some authority or other, be compelled to make that due provision for the future which should prevent such a thing as the water famine of this year in the East London District?—Yes, I think that that might be possibly carried out.

20,235. I mean, have you considered that point?—I have not considered it, absolutely.

20,236. Very well, then, I will not ask you on it; and I will not ask you about the inter-communication of the systems, because we have exhausted that subject. I take it that the clear result of your opinion is, that the Thames Scheme, for the next 50 years, at any rate, is by far the most economical?—Yes.

(*Chairman to the Counsel for the Water Companies.*) If there is anything I have omitted to ask Mr. Hunter, I should be obliged if you would put it. I do not propose to ask him anything else.

(*Witness.*) May I say this?

(*Chairman.*) Pray, do.

(*Witness.*) I desire to point out that while for the purpose of making a fair comparison between the cost of the Welsh and the Thames Schemes, I have included capitalisation of pumping charges, the capital sums to be expended by the companies for obtaining water under the Thames Scheme are, by Estimate 1, 4,483,000*l.*, and by Estimate 3, 4,309,670*l.*, making a total of 8,792,670*l.* This expenditure, to be made by instalment if and as the population actually increases, will be all that is necessary to provide raw water for at least the next 50 years, being at the average rate of about 176,000*l.* a year for the whole period, divided between seven companies. Of course, to this expenditure must be added the cost of providing additional filters, mains, and services necessary for every water supply. But the expenditure, with its accompanying revenue charges, will only be necessary, and will only be made, as and when it is required to meet actual increase in population, which increase in population will bring with it, not only the obligation to make the works, but increased income from the supply of the water resulting in increased, not in diminished, profits to the companies. I feel that I cannot too strongly urge upon the Royal Commission the great economical value of the Thames Scheme, in that it can and will be carried out by instalments if and when actually required.

20,237. (*Sir George Bruce.*) What quantity of water are you assuming to take from the Thames in 50 years hence?—That is up to the 400 million gallons.

20,238. To which your estimate applies?—Yes.

20,239. The 400 million gallons?—Yes.

Cross-examined by Mr. BALFOUR BROWNE.

20,240. I propose to ask very few questions, because a great deal of the ground is of course common to what Mr. Middleton had to say. As I understand, although I did not understand it before, you think that even if the County Council or any other body, trust or Commission were the purchasers, the best scheme is the Thames Scheme—the one you yourself designed?—That is my opinion.

20,241. And the cheapest?—And the cheapest.

20,242. It would be exhausted at some time?—Yes.

20,243. If the growth of London goes on?—Yes.

20,244. Suppose it were adopted and it were exhausted, do you see anything better than the Welsh?—No.

20,245. Now as to the question that you have just answered my Lord about control; can you conceive any company being under the control of a body of persons or of one gentleman to say that they should spend a million of money on reservoirs; could any company exist under such circumstances?—It would depend upon the man.

20,246. And it would depend upon the sum I should think, too?—I think that the companies, so far as my experience goes of them, are always alive and always ready—I am speaking more particularly of the company with which I am connected—to spend any money which is wanted for the protection of the interests of the consumers in London.

20,247. Do not suppose I am attacking the companies at all?—Quite so.

20,248. The idea of a company in my mind is that it is a body of persons carrying on an undertaking for profit?—Yes.

20,249. Now, I can quite conceive that an order to spend a certain amount on storage might turn a profitable undertaking into a loss?—Quite so.

20,250. I can quite conceive that in the meantime, up to the present time, all their expenditure on capital account has been upon their own initiation with the sanction of Parliament?—Certainly.

20,251. Now with regard to the differential prices charged for water in London; do you know of any corporation in this country that charges different prices within its municipal area?—No, I do not.

20,252. It is perfectly possible that the different charges may be incidental to the fact that there are eight companies supplying from different sources, but if there was one body—I will leave out the County Council just now altogether—a trust or Commission supplying the whole of Water London, would not that anomaly be swept away?—Probably.

20,253. Now, with regard to another matter, which is a matter which you mentioned yesterday; you said that the limitation to 15 days had been made at the instance, as I understand you, of the Local Government Board acting upon the advice of the Water Examiner. I find this in the Report—I think it is your own evidence, Mr. Hunter, so I suppose it is accurate—"We provide storage enough for four months of drought, which I think you will find from the figures given at the end of the statement occurred in 1887; then in addition to that for 15 days of flood, supposing the flood to come immediately after the drought; that is to meet the requirements of the Local Government Board particularly, as stated by General Scott and Dr. Frankland, who considered that the water should be stored for some time after it is taken from the Thames when the Thames is running above a certain amount." So that apparently that suggestion had not only the approval of General Scott, but of Sir Edward Frankland?—I have no doubt you are right, and that that is exactly what I said. I do not remember it exactly.

20,254. You did not mention Dr. Frankland yesterday?—I did not recollect it.

20,255. I do not suggest anything in that. You spoke about two days, I think, in answer to his Lordship; you admitted to his Lordship that owing to the length of the Thames two days would not have the effect of getting rid of the flood at the very top water?—No, and I have accepted six days in the figures I have placed before the Commission.

20,256. That, of course, is again a modification of the scheme as you originally put it before the Balfour of Burleigh Commission?—Quite right.

20,257. Again, you are modifying the 200 million minimum, as it is called, and altering that to 100 millions?—Yes.

20,258. First of all, do you remember that Mr. More gave evidence about this subject on the Bill of 1898? Mr. More, as of course, you told us yesterday, is the engineer of the Thames Conservancy?—Quite so.

20,259. There are two occasions upon which this question of the minimum flow came before Parliament—first, the Select Committee upon the London Water Companies in 1896 for the Staines reservoir, and, second, last year upon the Southwark and Vauxhall. I will read you what Mr. More said: "Will you explain to the Committee"—this is in 1896—"your reason for that opinion?" The opinion that he had expressed was: "I think in the interests of the neighbourhood below Richmond it is absolutely necessary"—that is the 200 millions—"as far as Richmond, the last weir on the river, it is not of so much importance, because the head water there is kept up by a weir." Then the question is: "Will you explain to the Committee your reason for that opinion?"—(A.) I may say that where you have a weir you do not lower the surface of the water by taking this extra quantity, but you simply reduce the flow of the current somewhat; and as the water in the summer is very pure in the Thames, and there is very little silt in it, you would have no fear of getting a deposit by reducing the flow of the current. But when you come to below Richmond, you are, for the purposes of the navigation, entirely dependent upon the land water after the tidal water has gone away, which happens three or four hours before the low water period. If you leave less than 200 million gallons, you render that part of the river almost unnavigable at low water altogether." "Does it also"—is the next question—"have the effect of leaving a large portion of the foreshore dry?"—(A.) Yes it has the effect of leaving a large portion of the foreshore dry, somewhat in the manner that happened between Teddington and Richmond; and it was really the cause of the Conservators having to build the weir at Richmond some years ago at an enormous expense." Then again, Mr. More in 1898, was asked this, at Question 2888—

(Chairman.) Before some Committee?

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20,260. (Mr. Balfour Browne.) Before the Committee upon the Southwark and Vauxhall Bill of last session. I need not read the question, because I think the answer speaks for itself—"No, I think myself, the quantity that was laid down by the Staines Reservoirs Bill is the quantity that ought to be adhered to in this Bill; that is, a quantity which would admit of 230 million gallons being left at Teddington;" and Mr. More, as we know, is the responsible engineer to the Thames Conservancy?—Quite so. But he had not then had the experience of 1898, which has caused me to modify my view, and I hope may cause Mr. More to modify his.

20,261. I hope not?—I may also point out, that I did propose in my evidence yesterday, that a half tidal weir should be made at Fulham to meet the very point of the navigability of the river. See 19,975.

20,262. Who is going to make that—the water companies, or some other body for them?—That is a question for consideration.

20,263. With regard to the estimates and comparisons that you have been putting in—comparisons between the Welsh Scheme, and the Thames Scheme, and the extra annual cost of the Welsh Scheme—are all those estimates made upon an estimate of the capital cost of the Welsh Scheme similar to that which Mr. Middleton gave?—Yes.

20,264. All done by analogy?—All done by analogy.

20,265. And none by surveys and ordinary engineering—taking levels and putting down the cost of the work?—Exactly. I would only point out in regard to that that the height of the Yrfon, as we understand the matter, will be 206 feet, and the length 5,500 feet; and that is about seven times the superficial area of the Vyrnwy.

20,266. (Sir George Bruce.) That is the dam?—Yes, I just mention that as a reason why we are rather disposed to think that our estimate by analogy is really not an exaggerated one. We have no wish to exaggerate in any way, but that is the best of our opinion.

20,267. (Mr. Balfour Browne.) Yes, in ignorance of the facts; you had to do it by analogy?—We had to do it by analogy, and I just point out that fact for what it is worth.

20,268. Let me take it again: all your calculations in these tables that you have put in to-day are upon the supposition that we would have to repay the money if we made the works in 60 years?—Yes, that is so.

20,269. You are aware, I daresay, that that is not our proposal. Whatever Parliament may allow, we propose to have a longer period if we can get it?—Quite so. They would want modifying to that extent.

20,270. You spoke yesterday of the very small effect of reducing the minimum—I am using the word again in your sense—to 200 millions and 100 millions taken at London Bridge?—Yes.

20,271. I want to take it at the place where the tidal action ceases—do you follow—there is a part of the river where the tidal action comes to an end; at that point you have to rely for removing what silt there must be upon the land water?—Yes.

20,272. And, therefore, your one per cent., or whatever it was, at London Bridge, becomes 100 per cent. there?—Quite so; but when there is plenty of water coming down to the river, as there is in times of flood, the silt and deposit would be washed out, the same as it is, as stated by Mr. Martin, in the Severn.

20,273. Admitted that floods have a great deal to do with it, you are going to try and catch some of the floods, of course?—Yes.

20,274. And modify them; but further than that, if you reduce the minimum flow for 180 days in a year like 1898, do you say that the effect on the silt in the river where the tidal action ceases would not be serious?—It would have an effect, no doubt, but that could be removed by dredging.

20,275. I daresay?—And it also would be washed out by the winter floods.

20,276. Who is to do the dredging?—I have no doubt the Thames Conservancy would wish to do that.

20,277. That is another detail. Having regard to the length of time I spent with Mr. Middleton, I do not propose to ask more. There is one thing, however, I want to put to you—you know it, of course—you are carrying out the works at the Staines reservoirs; will

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Mr. W. Hunter. you fill up what Mr. Middleton could not give me yesterday, namely, the cost of the land, excavation, banking, puddle, and the cost of the aqueduct. I have put out the questions, but to save time I daresay you will let me have them (*handing document to witness*). You will know them of course?—We will consider that. They are rather confidential figures, you know. We should be very pleased to do anything that is usual, or to hand them in to the Commission, but it is just a question whether we are justified in giving the details of these prices broadcast all over the place.

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20,277a. May I say that your estimate of the cost must depend upon those prices?—Quite so. I am only giving you the assurance that they are absolutely dependent upon the contract prices which we have in our contract, and that the quantities include 10 per cent. for contingencies. We will consider the matter.

(*Mr. Balfour Browne.*) Of course, if you object, I cannot absolutely insist on it.

(*Mr. Pope.*) If it could be done without disclosing the confidential facts as to the prices we are paying, I think, then, it would be reasonable to give the figures; but, as I understand Mr. Hunter's objection, they are based upon the actual contract prices he is paying.

(*Witness.*) That is so.

(*Mr. Pope.*) In that case it would not be fair.

(*Mr. Balfour Browne.*) If he would give me his estimate, not his prices, I would be quite content.

(*Mr. Pember.*) They are not estimates; they are facts.

(*Mr. Balfour Browne.*) There can be no privilege, of course, in his putting down estimates and not prices.

(*Mr. Pope.*) I am not claiming any privileges. I am only saying the reason why we decline to give you any figures that you ask, is because they are based upon the confidential prices which we are actually paying which would be disclosed to everybody connected who might come in for a subsequent contract: that is the real reason. We do not want to expose our contract prices to all the contractors who may tender for them.

(*Mr. Balfour Browne.*) I say, in regard to what Mr. Pope says, that I do not want to give information to any contractors, but I might get the prices to test the figures that Mr. Hunter has put.

(*Mr. Pope.*) If it can be done without creating any inconvenience, you ought to have it, and I think I may promise you you shall have it.

(*Mr. Balfour Browne.*) I am obliged to you.

(*Sir George Bruce to Mr. Balfour Browne.*) Have we got the schedule of prices upon which the Welsh Scheme has been calculated? I do not think we have.

(*Mr. Balfour Browne.*) If so you shall have them, sir, because there is not the slightest difficulty in getting them.

(*Sir George Bruce.*) There are no contracts there, of course.

(*Mr. Balfour Browne.*) There are no contracts there, but, of course, we can give you just what we have estimated. That is what I have asked Mr. Hunter to do.

(*Chairman.*) Why are you not contented with the total result? Mr. Hunter tells you:—"This total figure I have given you is based upon the total prices we pay for these different things."

(*Witness.*) It is so.

(*Mr. Balfour Browne.*) I think you will find out, my Lord, that they have put down prices against our Welsh Scheme four times higher than they have put against their own, and that would rather vitiate their comparison.

(*Mr. Pember.*) We have not put any prices against your Welsh Scheme.

(*Witness.*) We have not put any prices against it.

(*Mr. Balfour Browne.*) I beg your pardon. I know what prices you have put against my Welsh Scheme, because you have done it by analogy, and I know what prices you have got. I want to see what your prices were.

(*Mr. Pope.*) What we feel is, that we do not think that Sir Alexander Biunie has magic at his command, that he can do work more cheaply than Mr. Mansergh and these other gentlemen; and, therefore, taking the analogy, we take as much the actual prices paid in those

The witness withdrew.

cases as we do in our own case, the actual price paid for the Staines reservoir.

(*Mr. Balfour Browne.*) We cannot do magic; but we can make a big reservoir to contain twice the amount of water cheaper than Mr. Mansergh can make six reservoirs to hold less.

(*Mr. Pope.*) That is a matter of argument.

(*Mr. Balfour Browne.*) See what you have put; you have put these prices for the six little reservoirs, and charged us on the big reservoir.

(*Mr. Pope.*) That has already been disclosed.

(*Mr. Balfour Browne.*) Now, I want to have a comparison with your prices, applying them to my reservoirs, and I will show that your analogy is wrong.

(*Witness.*) I will only point out that prices have gone up very much lately, and that those Liverpool and Birmingham and Thirlmere works would probably have cost a good deal more now than then.

20,278. (*Chairman.*) Is there anything more, Mr. Hunter?—There is another table I have which I think you may find useful. It gives the percentage upon the natural flow taken out from the river every year. It gives the total flow in the year, the amount which would be taken out for a daily supply of 300 million gallons, and for a daily supply of 400 million gallons, and the percentage.

(*The witness handed in Table 3. See Appendix M, Table 3.*)

20,279. Just let me see that I understand this table. You have given us for the years 1883 to 1897 in the first column the average daily flow of the Thames?—Yes.

20,280. Those are actual facts, I suppose?—Yes.

20,281. That average daily flow being ascertained by what—by the gaugings?—By the Thames Conservancy, those are the gaugings of the Thames Conservancy.

20,282-3. (*Sir George Bruce.*) Is that the flow over Teddington?—Yes.

(*Mr. Pember.*) It states so at the top.

20,284-5. (*Chairman.*) Then you have got the average daily take of the companies?—Yes.

20,286. I suppose that is deduced from the Water Examiner's Report?—That is so.

20,287. Then you give the flow at Teddington for the year—that is merely multiplying the average daily flow by 365?—By 365, or 366 in the case of leap year. The natural flow at Teddington in each year is adding the yearly quantity taken out by the Water Companies to that amount in the previous column. That would be the natural flow, supposing the Water Companies were taking no water at all.

20,288. Then your next column is the annual take of the companies for an average daily supply of 300 million gallons?—Yes.

20,289. How do you estimate that—on what they would have taken in those years if they had been supplying?—It is the annual take which they would take under a 300 million gallons daily supply; the 300 million gallons multiplied by 365 gives 109,500 million gallons.

20,290. I see; it is mere arithmetic?—That is 15.9 per cent. in the case of the 300 million gallons, you see.

20,291. In the year 1883?—Upon that year; and for 400 million gallons supplied it is 146,000 million gallons, which would be 21.1 per cent. and it goes on all down the table and I thought it might be useful because you see the percentage which is taken, and, therefore, that there is plenty of water left to put into the reservoir.

20,292. Plenty of water left on the average?—That, of course, includes what we take into the reservoir.

20,293. Plenty of water left on the average?—Yes.

20,294. But in particular months, of course, the result would be otherwise?—Exactly; that is why we want the reservoirs—the bottles to put the water in.

20,295. Were you responsible at all for the evidence that was given before Sir Joseph Pease's Committee?—Yes.

20,296. Whom did you represent there?—The Grand Junction—in fact I represented the Staines Reservoir. I was Joint Engineer with Mr. Middleton for the Bill.

20,297. Did the Grand Junction give any evidence about their future requirements?—Yes, they did.

Sir FREDERICK BRAMWELL, Bart., F.R.S., called and examined.

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20,298. (*Chairman.*) Your qualifications are too well known, I think, to make it the least necessary for me to refer to them. You have been, I believe, for many years consulted about works in connexion with the Metropolitan Water Supply?—Yes.

20,299. And about the applications to Parliament of the water companies?—Yes.

20,300. And you gave evidence before Lord Balfour's Commission?—Yes.

20,301. Did you represent the Metropolitan Board of Works in the proceedings held with regard to the constant supply of water to the Metropolis?—Yes; the proceedings in reference to the requisite fittings. That was in 1872.

20,302. I believe you concurred in settling the regulations that were made for that purpose?—Yes. I had a large share in them. I have a copy of the regulations here. They have continued ever since unaltered. An effort was made to alter them about three years ago, as regards the amount to be given for flushing the water-closets. An inquiry was instituted, and the effort proved abortive.

20,303. Now, with regard to the supply of London. I presume the ratepayers and the consumers of water are almost identical as far as domestic supply is concerned?—That is so, as it appears to me.

20,304. On the other hand, are the owners of industrial undertakings customers of the water companies for their water?—They may be entirely; they may not be at all; they may be in part. All those circumstances are known. In industrial undertakings there are private wells, and, therefore, their interest with the water companies is not the same as the domestic consumer, because they may, or may not, take water.

20,305. Could you tell us at all what proportion of London industrial undertakings are dependent upon the water companies, and what proportion are independent?—No, I cannot. I know in the case of certain breweries where they have their own wells, and where my firm has been advising.

20,306. I suppose to undertakings of that sort, that are now independent of a water company, it is a question of considerable importance as to whether the remuneration for water is, by a water rate, paid by the consumers, or whether it is a "rate-in-aid" levied upon all the ratepayers of the Metropolis?—Clearly, it would be extremely important to those persons. As long as the companies remain it appears to me they cannot possibly have a "rate-in-aid."

20,307. But if a municipal authority managed the water supply of London, we know, by example of what has taken place in other places, that a "rate-in-aid" might possibly be resorted to?—Certainly.

20,308. Then you say the industrial establishments—the industrial undertakings of London—would be subjected to a new tax?—Yes.

20,309. (*Mr. De Bock Porter.*) But they are very great gainers, I suppose, by having their separate supply?—I am afraid I do not follow you.

20,310. Those undertakings which have sunk wells are very great gainers by having done so, are they not?—Yes; that is to say, they get the water for the interest upon the capital embarked, and upon the cost of pumping.

20,311. Which is far less than they would have to pay to any company?—I presume so, or else they would not do it.

20,312. (*Chairman.*) You know the subject submitted to us, namely, whether a purchase by any one or more authorities is financially expedient. Perhaps you would kindly give us the result of your judgment upon that?—In my opinion it is not expedient that the companies should be acquired, either in the interests of the water consumers, or, in so far as they are separate, the interests of the ratepayers. I do not know whether I may say why I think so.

20,313. Pray, do so?—I will assume that they could not be acquired without the acquiring authority or authorities paying for them such a sum as would represent the profit income they now derive. Anything else, it appears to me, would be unfair to the persons who originally embarked their money under the Parliamentary sanction and guarantee of the income, if it

could be earned, and to the persons who subsequently bought shares at enhanced prices, due to the decrease in the value of money and other causes. I presume, therefore, they would have to pay the full value of them. If that be so, taking that into account, and the sinking fund into account, it seems to me perfectly certain that the purchasing authority could not afford to make a less charge for water than is made now. If that be so, therefore, there is no saving to the consumer. As regards the ratepayer getting any profit out of the transaction, I think that is extremely problematical, because, as I say, the full value would have to be paid; and I do not see where the economy is to come from, if, in extensions, the companies, under the sanction of the Auction Clauses, and raising the money as they do by debentures, can get their money practically as cheaply as the others, and there is no sinking fund to be paid, except the particular sinking fund I may have to talk of hereafter. If it be under the notion that there will be economy in management, I do not believe it. I do not see where the economy is to come in. London is so placed that the eight companies do not appear to me to be, any of them, in excess of the management needed for the inhabitants they supply. The officials will have to be equally numerous, or the work will be worse done. They will have to be equally well paid. You do not imagine that a trading company pays more than it needs; and the only thing that I can see is the saving in directors' fees. Now, they amount to $1\frac{1}{4}$ per cent. of the total receipts, and there will have to be compensation paid to the directors in the purchase, and there will have to be the appointment of officials—heads of departments—which will go very largely to wipe out any saving made that way.

20,314. (*Mr. De Bock Porter.*) There is one item, the collection of the rates, which amounts to 50,000*l.* a year; might not that be collected at the same time as the municipal rate?—I have not thought of it—it may or may not be, I do not know; I have not given my attention to it.

20,315. (*Chairman.*) That would be a very considerable saving?—That would be a considerable saving. I do not remember what the percentage would come to.

20,316. I understand you to say that, in your opinion, the interest on the necessary capital for the purchase of the undertakings, and the payments to be made for sinking fund, would absorb all the profits to be made out of the sale of water?—I should think so.

20,317. So that no reduction of rate would be possible?—I do not think any reduction in the rate would be possible.

20,318. Surely if the income grows as it has done in London hitherto, and as it has done in other municipalities, would there not ultimately be a possibility of reducing the water rates?—If the income grows it will grow on account of the new capital to be expended, and that new capital will demand its own interest and sinking fund.

20,319. Yes, but the interest will only be $2\frac{1}{2}$ per cent.—I do not know what percentage to state for the sinking fund—whereas the capital which has been hitherto expended in water undertakings has produced 10 per cent.?—That, as we know, was the original 1847 Act in respect of where there was no fixed rate put in the promoters' Act.

20,320. But the companies have by degrees, several of them at least, been creeping up to the 10 per cent., and some of them have reached it and have even paid back dividends?—Yes; I am fortunate enough to be a consumer of the West Middlesex Water Company, and I get a very satisfactory reduction of 10 per cent. on my water bill every half-year.

20,321. Then, surely, one would expect that the income of the West Middlesex Water Company would enable any municipal purchaser, any purchaser who is a public authority, to pay interest on purchase money and sinking fund instalments, and at the same time to have a balance which might be applied to the reduction of water charges?—Is your Lordship speaking of prospective capital?

20,322. Prospective income, rather?—What I was urging was that the companies can raise capital and do raise it now at a very low rate, because they raise it, I believe, entirely by debentures, and those debentures

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tures are offered under the auction clauses, and they thereby raise it at as low a rate as the market value of that kind of security; and I do not think a municipal body would raise it at a much lower rate, say, a quarter or half per cent. at the utmost, not even so much as that when taking into account the sinking fund.

20,323. But a given expenditure of capital produces, does it not, every year an increased revenue from the addition to the number of houses, from the increased supplies, and so on, it becomes every year more remunerative?—It does, with qualifications; that is to say, you will find those large companies are spending every year enormous sums of money for the mere subsidiary mains needed to earn extra income.

20,324. (*Mr. De Bock Porter.*) But, still, they have derived increasing profits, have they not?—Up to a certain time; I do not think there has been much increase lately. But what I was trying to do was to answer what I thought was his Lordship's question in reference to a capital of 10 per cent. I say that is entirely a thing of the past, and the raising of capital at the present day is not that or anything bordering upon it, and cannot be.

20,325. (*Chairman.*) You mean, that a man who purchases water shares to-day in London, would pay 300*l.* for a 100*l.* share, and only gets 3 per cent. therefore?—Exactly.

20,326. That is true enough?—And what is more, the consumer, when he is thinking about what he has to pay for water supplied on extension, knows that the capital will be got by the companies at 3 per cent.

20,327. The experience of other municipalities than London, which have bought the water undertakings, has been that, in the course of some years, they have been able to reduce the water charges very much lower than they were, and yet to pay their way?—I am not so sure about that. I have a strong recollection of having been consulted by the Corporation of Liverpool as regards the necessity of a rate-in-aid to supplement the charges; and, I think you will find there is a rate-in-aid in Manchester.

20,328. We have had a number of instances given to us, but in my recollection the rate-in-aid and the water charges together come to a reduction upon the old water charges of the company?—I am not in a position to say that may not be so, but I very much doubt it in many important cases.

20,329. (*Mr. De Bock Porter.*) At the present time, I think, in Manchester, the rate-in-aid and the charge on percentage together only amount to 5 per cent. on the rateable value?—That may be so; but 5 per cent. upon the rateable value, I think, is not very much below that which the companies charge now, on the average.

20,330. The charges are much higher than that on some of the smaller properties in London?—If that be so, it is the smaller properties that waste the water more than the larger ones, and are the less remunerative. The whole thing arises from the fact that you are selling a commodity not by the quantity used, as you sell gas, but by rating.

20,331. (*Chairman.*) Would not the public authority, if it purchased the companies, be more efficient in protecting waste than a private company?—No, I doubt it very much indeed. I have so much in mind the facts in the United States.

20,332. What are those facts, will you kindly tell us?—I thought it would be convenient, instead of handing in the official documents of certain towns, to abstract them, and put them in the form of a memorandum which I will hand in.

(*The witness handed in a memorandum on the waste of water in certain cities in the United States. See Appendix Z, 6.*)

(*Mr. Mellor.*) That is very much more convenient.

(*Witness.*) Might I say, my Lord, that I have been three times in the United States; the first time was so long ago as not to make it pertinent to the present inquiry; but I was there in 1832 and 1884, and on both occasions I made it my business, as far as I was able, to inquire into the question of water supply. I knew about New York slightly. I could not get at the official returns. I knew about Boston; but I principally knew about Philadelphia, for it so happened that in 1884 I was the guest of a very eminent civil engineer living in Spruce Street, Philadelphia—not an elevated part of the town at all—and I know what happened to me in this respect. The weather was intensely hot, a

bath most desirable; but the bath 30 feet above the pavement was incapable of being supplied with water which would not rise so high in the house, and it had to be filled by water cans from below. I inquired into the matter, and I have furnished myself with the official report for the year 1891, and again with the official report for the year 1896. I have not been able this year to get the official report for 1897, but I have got a journal called the "Gas and Water Review of New York," which sets forth the Report of 1897. I may say to you as evidence of what goes on there, that in 1880 there was given to each head of the population per day, 68 American gallons. May I say, if it is not already known, that an American gallon is $\frac{8}{9}$ ths exactly of an English gallon.

20,333. (*Chairman.*) So that 68 American gallons equal 57 English gallons?—That is so. Then in 1890 the quantity per head was 131 American gallons and 109 English.

20,334. That is an increase per head of what?—Of 63 American gallons and 52 English; all but double.

20,335. Does the report at all explain that enormous increase?—No, my Lord, but they applied expressions to it. The report says:—"No one would pretend to believe that this represents water actually consumed for either household or manufacturing purposes, and that in 1890 there should be required 131 gallons per day, or 63 gallons per day more than in 1880 for every man, woman, and child in Philadelphia. On the contrary, everybody must be satisfied that these figures represent a flagrant waste of water." Then in my memorandum I continue the quotations showing how they deplore it, and also showing that up to that time they had not any filtration of the water at all.

20,336. (*Mr. Mellor.*) Where do they get their water from?—From three rivers, I think—the Delaware, one I can never pronounce, the Schuylkill, I think it is called, and I think from another stream. Mr. Trautwine reports: "The average daily *per capita* consumption increased from 160 to 172·2 gallons per head per day, and even much higher rates have been observed in certain cases by means of the Deacon Waste Water Meter. At page 110 begins a proposition for an Ordinance to extend the use of meters to prevent waste."

20,337. (*Chairman.*) Can you at all explain that enormous consumption of water?—It is not consumption, it is gross waste. I do not know what term to use; it is an enormous distribution of water; I cannot explain it. I have been told the reason.

20,338. What is it?—That they are afraid of their electorate, and dare not enforce any regulation which would prevent this. That is the reason I am told.

20,339. That is a weakness, if I may so call it, which sometimes does arise in municipal matters?—It seems to me not unlikely.

(*Mr. Pember.*) It is a weakness in London.

(*Witness.*) I think it is an instructive document to read. My memorandum contains the following extract: "We are now furnishing water from that reservoir to a locality which has heretofore been compelled to depend upon direct pumpage from the river. When we have a complete system of subsiding basins, and a filtration plant that will answer the purpose; the question of a pure and adequate water supply to our city for many generations at least will be settled." Then I have added a footnote, from which you will see that the consumption is going up. "I have not yet obtained the corresponding official report for the year 1897, but I have had sent me the 'New York Water and Gas Review' published in New York in March of this year, giving an epitome of the Philadelphia Report, and from that I find that the consumption for 1897 had gone up to 215 American gallons (i.e., 179 English gallons) per head per day, being an increase in the year of 42·5 American gallons (i.e., 35 English gallons) per head per day."

20,340. (*Chairman.*) That is in New York, is it?—Philadelphia.

20,341. Before we leave the question of consumption per head, I should like your opinion as to what you think ought to satisfy all reasonable demands for domestic supply per head of population in such a city as London?—When I gave evidence before Lord Balfour's Commission I stated that a total supply of 20 gallons domestic, and 6 for manufacturing, would be sufficient. I based that evidence upon my knowledge of what was done in Sheffield, what was done in

Norwich, and what was done with the water company of which I was then a director, and am now chairman, supplying a very well-to-do population indeed, which was then giving 17½ gallons per head per day on a constant supply, and under the frightful pressure of 450 feet in the engine-house.

20,342. Where was that?—The East Surrey Company. They made a return, I think, to the Commission. Now, although we are the same management, and we take every pains at the present time, that 17½ gallons has gone up to 22, in spite of all our efforts.

20,343. Do you attribute that to increased use of water or to waste?—Not to waste, certainly, but very largely to the increase of baths in houses of comparatively low rental. I believe that is the principal thing.

(Mr. Pember.) I do not know whether Sir Frederick happens to have seen it, but we have a list of about 20 different towns made out expressly for him with the consumption in each, and it might be instructive to you, my Lord?

(Witness.) I have not seen it.

20,344. (Chairman.) That is taking place in East Surrey, but in London, also, is it not very striking that all the new houses have baths, where such a thing was not thought of a few years ago?—Yes, and now, therefore, I frankly accept, although I think the amount high, the 35 gallons of Lord Balfour's Commission.

20,345. We have been told that you, before Sir Joseph Pease's Committee, stated the facts were too strong for you, and you no longer adhered to your estimate of 26 gallons a day?—That is what I am now repeating to your Lordship.

20,346. You did not tell Sir Joseph Pease's Committee what amount you thought sufficient. You say, now, you think 35 gallons per head per day sufficient?—I think it is not only sufficient, but I think it is very ample.

20,347. Do not you anticipate the same sort of extravagant tendency in London that you have seen in New York and in Philadelphia?—No, I hope not. I think, under the existing management, it would be kept down.

20,348. (Mr. Mellor.) Where do you think the great waste occurred in New York?—New York I have not yet spoken of. I have been speaking of Philadelphia at present.

20,349. Philadelphia will answer the purpose of my question?—You want to know where it occurred?

20,350. Yes?—I do not know.

20,351. Had you any information in regard to the mode in which the great waste occurred?—They do not know. They do not pretend to know themselves. I know in this way: It results from there being no proper regulations as regards fittings, and no enforcement of such regulations as they have.

20,352. (Chairman.) I was told privately—I do not know whether there is any truth in the information—that the owners of bars and saloons, who are very influential persons in these American cities, left their taps running all day where the glasses were washed?—I should think it is extremely likely, but I do not pretend to know. There is no doubt, however, that Philadelphia is one of the finest cities of the Union, and that the people are intelligent, and so on. Nevertheless, here is a result, and you will find in these extracts that they complain bitterly that the water department cannot get any appropriation from the councils to do anything, for they leave them dependent upon a single pipe, which, if it were to burst, would put the whole district out of supply, and matters of that sort.

20,353. Then I gather that, at least, American municipal management does not commend itself to your judgment?—Not in the three instances I know of. May I just go to New York?

20,354. Pray, do so?—I could not get any official report there. I found that this thing was taking place. The water is delivered at a very low pressure owing to the great consumption; and, perhaps, I might occupy a minute or two of your time in showing what I mean by that. Let us take a suppositions case. Suppose you have a reservoir 100 feet above datum; that you had a pipe to supply 1,000 gallons an hour, say, and that 1,000 gallons an hour could be driven through that

pipe by a differential head of 10 feet, you would have 100 feet at the entering head; you would have 90 feet at the delivery end; that delivery end, therefore, could supply water at the top of a house above 80 feet high. Suppose you now want 2,000 gallons an hour through the same pipe; you cannot raise the source of supply, it is a reservoir fixed at 100 feet above datum. The only way you can get the extra pressure, which is four times, remember, for a double quantity, is, therefore, to diminish the pressure at the outlet. Your outlet now represents a pressure of only 60 feet instead of 90 as it was before, and, therefore, you can no longer supply a house 80 feet high; you can only supply a house 50 feet high. Again, if you wanted three times the quantity, you would want to have 90 feet head, and you would have the remaining head at the delivery end 10 feet just above the pavement. Now, in Philadelphia, owing to this enormous increase in delivery through the mains, the pressure is, I have told you, so diminished, that you cannot get a supply to a bath 30 feet above the pavement. In New York, you will see, the pressure also diminished. Problem, how to get water from the basement to the top of houses when the pipes will not deliver it. I am speaking of 1884, and houses of ordinary height like the houses here—not gigantic buildings such as have been erected since then in many cases. Now, you will see in ironmongers' shop windows hydraulic engines for sale, and those engines are put in the basement of houses to be worked by the low-pressure water that the company supplies, and to pump up a portion of that water to the top of the building.

20,355. (Sir John Dorington.) In fact, the water supply is used for power?—The water supply is used for power, and the water supply for power, instead of being 700 lbs. per square inch as we have it, under a private company in London, is something so small that it will not go to the upper stories of an ordinary house.

20,356. That accounts for the enormous consumption, probably?—No doubt. It is a thing that reacts upon itself. The enormous consumption diminishes the pressure, and the diminished pressure causes an extra consumption.

20,357. (Major-General Scott.) I suppose eight or ten times the quantity of water raised would go to waste through the ram?—I should say so, certainly. These were not rams, however; they were little hydraulic engines, cylinders and pistons or plungers; but it comes to the same thing. The probability is that they would not give ¼th or ⅓th of the water at the top of the house, and the rest would go to waste.

20,358. (Sir John Dorington.) Every man pumps his own water?—Yes, by the aid of the water.

20,359. (Chairman.) I suppose we need not anticipate so dire a result as that in the event of the purchase of the London companies by the public authority?—May I say, my Lord, the matter has become so bad in Philadelphia that two or three private companies have gone to the municipalities—you will find it stated here—to relieve them of their difficulties by making filtration works and supplying water at a price. I know something of this, in addition to what is in the report, because they came over to me and my partner to advise them about filtration plant, and things of that sort. I know it has been suggested more than once.

20,360. Private companies have taken part of the municipal duties off their hands?—Yes; you will find that in this paper.

20,361. One may say, therefore, that in America municipal management has broken down?—I cannot say that, of course. America is a large place, and there are many many towns in it; but I speak of Boston, New York, and Philadelphia—principally Philadelphia, because I was there some little time, and with very intimate friends there, engineers.

20,362. But has not municipal management in England been more successful?—I think so, certainly. I cannot say much for Glasgow.

20,363. Are you familiar with Bradford?—I have appeared for them a good many times about their Bills. It is a place where Sir Alexander Binnie was engineer for some time.

20,364. What do you say about the management there by the Bradford Corporation?—I do not know. I know that Sir Alexander Binnie introduced Deacon's meters, and made a report in which he pointed out that

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by the use of them a large amount of the water that had hitherto been wasted had been saved.

20,365. Has there ever been any failure of supply in Bradford?—Yes; perennially, nearly. I am reading now, my Lord, from a letter I wrote to the "Times," on the 16th February 1897, if you will allow me to do so (because I was at the pains to verify all my facts then), as a compendious way of getting to them now. "It may, perhaps, surprise those of your readers who pin their faith to municipal control of supply when I mention that in the city of Manchester, in the autumn of the 'Jubilee' year, the supply was so short that baths had to be prohibited; that in Bradford, the corporation, as appears from a report of the Waterworks Committee in October, 1887, 'have been under the necessity of placing the town 'on short supply during portions of the years 1876, '1877, 1878, 1879, 1880, 1883, 1884, and again this 'year.' That was 1887. Then we have Bradford, 1898. This is from "The Journal of Gaslighting," July 26th, 1898: "In submitting the usual statistics as to the condition of the water supply at the last meeting of the Bradford City Council, Alderman Holdsworth made a statement, which shows that the consumption of water on the high level, at the present time, is nearly as large as on the low level; and this has been the state of things for the last month. Taking into consideration that the quantity of storage in the low level is five times that in the high level, the position is somewhat serious. Notwithstanding that the corporation have more water than last year, they are worse off. They have no water to pump to the high level, because the conduits only carry what is sufficient for the low level. It is hoped that in a few months the Baden reservoir will be made into a high level storage reservoir. In the meantime, matters are strained; and it is just a question whether it will not be necessary in the course of a week or so to put the whole city on short supply."

20,366. The date of that is what?—26th July 1898, and that has been going on, your Lordship sees, since 1876. Therefore, they have not been without warning.

20,367. (Mr. De Bock Porter.) Would you say that that was the result of municipalisation?—I think so. I think if it had been in the hands of a private company, bound to keep up the supply, they would have done it.

20,368. Do you know when the municipality obtained the supply?—A good many years ago now; before 1876, certainly.

20,369. (Chairman.) But, you see, Parliament has put the London companies into that position that they are not bound to keep up the supply in the case of frost or drought?—That is the common provision in the 1847 Act, and would apply to every municipality, and to everybody else.

20,370. So be it; then the incentive is wanting in the position in which the London companies have been put by the Legislature; they may go on claiming their water rates, and receiving their income though they do not give a drop of water?—Under the same circumstances, so far as I know—I shall be glad to be corrected if I am wrong—that is true of any water authority of any kind, private or public.

20,371. Yes; but the water authority has no motive to stint expenditure, because it comes, not out of its own pocket, but the pockets of the ratepayers?—Exactly, that is the motive.

20,372. Whereas the water company has every motive to stint its expenditure, because a large expenditure to keep up the existing supply is not profitable?—I do not think the conduct of the London water companies bears out that, my Lord. They have not stinted.

20,373. The East London?—Well, we shall have something to say about the East London, I hope, in Parliament.

20,374. (Mr. De Bock Porter.) But you would say, would you not, Sir Frederick, that the condition in East London was worse than in almost any municipality in England during this last year?—No. I think you will find that the quantity pumped into the district was quite as large as Parliament reserved to Manchester, when Manchester had, from the Thirlmere supply, to give water to other towns, until the quantity delivered into Manchester fell to 25 gallons a head.

20,375. It did not reach the people?—I cannot help that.

20,376. (Mr. Pember.) Yes, it reached the people, but they did not store it, and, therefore, it ran to waste?—As regards storage, I know something of that in relation to the Waterworks Fittings Inquiry.

20,377. (Chairman.) We have had it in evidence before us by the officials of the East London Company itself, that they have been receiving something like 13½ million gallons a day in these months just past from other companies?—Yes.

20,378. Their supply was deficient and had broken down to that extent?—Yes. I think when the case of the East London Company comes to be inquired into, and the way in which they have been treated, it is not to be wondered at.

20,379. Perhaps you had better say at once how you consider they have been treated?—When they came to Parliament, I think it was in 1893, Parliament said to them, although they were supplying one-third of London, "We will not even let you go to a Committee to find out whether the allegation that you want more storage or more works is correct." That is what I call bad treatment."

20,380. (Mr. Pember.) And only allowed it by a majority of one in 1894?—Exactly. That was at the instance of a speech by a gentleman, Mr. Stuart, representing the London County Council. I have referred to Hansard for it.

(Chairman.) That is denied, you know. However, we will not go into it.

(Witness.) I mean to say it appears to me to be contemptuous when an important body having great obligations upon it comes to Parliament and says seriously: "We want to spend capital to do certain things," for Parliament to turn round and say: "We will not even let you be heard before a Committee."

20,381. I am afraid it is not our business to criticise Parliament?—No; but I may, perhaps, allude to it as an explanation of the default.

20,382. But you see, perhaps, all these restrictions that Parliament may have put upon different companies have been largely due to the idea that purchase was in the air and was imminent, and it was not fair to put upon the purchaser the expense of providing for all this extra capital that the companies wanted to expend?—Which they only wanted for the purpose of supply, and which would be required by the purchaser, unless the purchaser determined to give up the supply, which was then what was in the air.

(Mr. Pember.) Will you allow me to say, my Lord, that in the summary, or what affects to be a "List of the companies' Bills introduced since 1880, with summary of proceedings and results, indicating ultimate purchase," it is unfortunate that we do not find any reference whatever to the Bill of 1893.

(Chairman.) Are you alluding to something we have got on our notes?

(Mr. Pember.) Yes, the document handed in at Question 37.

(Chairman.) I think we have got those proceedings of 1893 and 1894 burned into our memories.

(Mr. Pember.) If they are burned into your minds now, my Lord, I am afraid it is because I have applied some of the caustic from time to time.

(Chairman.) 1893 is not mentioned. 1894 is mentioned. This is only a summary of measures passed, is it not?

(Mr. Pember.) Introduced, I thought it was.

(Mr. H. L. Cripps.) You will see it is headed "With summary of proceedings and result"—it was not intended when it was prepared to include all the abortive Bills of various kinds that have been introduced. But it deals with every Bill that was referred to a Select Committee and discussed.

(Mr. Pember.) The word is "introduced."

(Mr. H. L. Cripps.) And they are Bills "indicating ultimate purchase." I do not know whether the 1893 Bill indicated that or not.

20,383. (Chairman.) We have spoken about Bradford and Manchester; have you any experience of failure in Sheffield supply?—Failures by frost.

20,384. When was that?—In 1895. I was staying in Sheffield in March 1895. That was a winter of great

front, your Lordship remembers; and there I was on business with a very eminent solicitor, of the name of Burdekin, a man of my own age. I dined at his house, and he told me that many weeks past—that was in March—he had been without any water, except what was brought by water carts, because the pipes were all frozen.

20,385. Had those pipes been laid by the company which the municipality had bought up?—Very likely, they did buy it up, I do not know how many years ago, a good many years ago. I should think 15 years ago.

20,386. Was the corporation there responsible for laying the pipes too near the surface?—I do not know. They certainly were responsible for keeping them there.

20,387. I do not know whether you have any other observations to make in support of your view that a municipal body should not be the purchaser of these eight companies?—No instances. I have general reasons. I think it is extremely undesirable that the control of the water should be in the hands of a fluctuating body. You cannot get unity of purpose as you can with a continuing body; and, as you will see if you will read these Philadelphia reports, money is wanted, but the council will not give it, with the result that they are left dependent upon single mains and single pumps, and that they cannot even get roofs to their places, and so on. I do not see any reason why an English municipality should be any more intelligent, or better governing, than a city such as Philadelphia, with a million and a third of inhabitants.

20,388. What would be your view about splitting up the undertakings of the existing water companies among several authorities?—Well, I should say confusion worse confounded. I cannot imagine it as a serious proposition.

20,389. In speaking about management by a municipal authority, hitherto you have confined yourself, I think, to considerations of the waste of water, and so on, and the supply at high levels; have you anything to say about the quality of water that they supply. Is it any better?—Well, I must go back again to Philadelphia. They have been pressing now for filtration for years, and they have never yet got a grant to supply it, and if I may refer you to that memorandum, you will find a table referred to there comparing the death rate with that of London. “At page 117, he”—Trautwine—“says that he has given on Fig. 1 (see page 113), a diagram showing the number of deaths from ‘fever’ including typhoid, per 100,000 persons living ‘in London from 1885 to 1891, taken from the evidence ‘of Thomas Orme Dudfield, M.D., before the Royal ‘Commission on Metropolitan Water Supply’”—Lord Balfour’s Commission, I presume. And then he says: “A comparison of this diagram with that of Philadelphia shows that the need of filtration is sufficiently ‘evident without any exaggeration of our city’s ‘typhoid mortality.’” Then, measuring the diagram, “the proportion in London appears to be according to ‘the diagram about 17, while that of Philadelphia is ‘about 70.”

20,390. Yes, I am sorry for Philadelphia, but let us confine ourselves, if we can, to our English towns. Do these great corporations of Manchester, Liverpool, Sheffield, and so on, deliver pure water to their consumers?—I believe so.

20,391. As good as London water companies?—I believe so, in so far as occasional peaty water can be as good.

20,392. (Sir John Dorington.) Is the water commonly tinged with peat?—Occasionally—not infrequently.

20,393. (Chairman.) The Thirlmere water is peaty, is it?—To a certain extent, I believe. But I am thinking more of the day before the advent of the Thirlmere water, when you never saw a water bottle in the Queen’s Hotel in a clear glass; it was always a hop bottle.

30,394. (Major-General Scott.) The Glasgow water is not filtered, is it?—I do not know. It was not, I believe. I do not know whether by this time it is or not, but all that I have ever taken an interest in about Glasgow was the excessive so-called consumption, which I always said was an incitement to other municipalities not to be careful. They were drawing upon what was then a practically unlimited supply, but I suppose they have not found it so since.

20,395. (Chairman.) Then to come back for a moment to the subject of the severance of these undertakings, we have had laid before us the view that the London County Council might purchase the whole of the eight companies and then sell off to the surrounding metropolitan counties their share both of works of distribution and sources of supply. What judgment should you form upon a scheme of that sort?—As to works of distribution, I can understand selling them, but it seems to me extremely difficult to sell off the sources of supply because, as a rule, they do not happen to have any particular relation to the counties spoken of; but if eight companies be too many, as some people think, to manage the undertakings, surely these small bodies must be too numerous. It is a pure matter of sentiment that each particular government should have its own water supply in its own hands. Well, why not the Islington vestry with its 300,000 inhabitants. I do not see where it is to stop.

20,396. (Sir John Dorington.) The Islington Vestry is a component part of the administrative county of London, but the county of Essex and the county of Hertford are not component parts of the administrative county of London?—Is not that a mere matter of words?

20,397. Surely not?—I should have thought it was. I daresay if you were to go to the Islington Vestry you would find the chairman of that vestry think himself a very important person in respect of the county of London.

20,398. The county of London exercises its authority within the area of the vestry of Islington, but it does not exercise any authority within the county of Hertford?—No.

20,399. (Chairman.) The contention of those counties, and the reason why I may say they have extorted from the London County Council terms of severance, is this:—They say, We have got abundant water at home which we can use if we are the water authority and we do not want to be drawn into the expense of going to Wales or of carrying out enormous works for the supply of the administrative county of London?—Is that true as to their abundant supply of water at home, as to all of them, at any rate. Take, for example, Croydon. I think I am not wrong in saying Croydon has been on short supply. What would the county then do?

20,400. Most people have been this year on short supply?—Yes, even the East London.

20,401. And many other places besides. This has been the root of the insistence of the metropolitan counties for severance, they say, we will not be dragged into expensive schemes which are not necessary for us because we have wells, and so on, and can supply our own needs?—Yes.

20,402. And some of them—for instance, Middlesex—have raised claims of priority upon the River Thames?—It does seem to me, if you wanted to contrive something which would add to bad management and expense of management, it would be, to break the thing up into a number of separate bits.

20,403. You see it is broken up into eight bits now?—Quite so; and the suggestion is that there ought to be one because there are eight. Therefore, I make a rule-of-three sum. If eight bodies are objectionable and one preferable, how objectionable are 20. I do not know whether I am right as to the number. I am told it is 40.

20,404. You think one body would be objectionable if—It all depends upon what body.

20,405. Let us go to that. Why not a great representative body like the London County Council?—Well, if I may do so, I would rather consider what body should not. I mean many bodies may be imagined, but it is very easy to deal with the one body of all others which should not have it, and that, to my mind, is the London County Council.

20,406. Will you tell us why?—Because of their avowed disbelief in the purity of the present supply. I find that at page 48 of the speeches on the 15th June 1896 on the Staines Bill, Mr. Balfour Browne, on behalf of the London County Council, arguing against the passage of the Bill, said: “And it will make the ‘abandonment of the Thames, as a source of supply ‘a policy which, rightly or wrongly, has been decided ‘upon by the County Council, and which will ultimately commend itself to everybody in London,

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Sir F. Bramwell, 31., F.R.S. "much more difficult." That that was the policy of the London County Council in those days I do not think there is a moment's doubt to be entertained.

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20,407. They have modified their views now, and they only regard Wales as a supplementary supply?—So they say; and my opinion is that the body that went there for a supplementary supply, having only modified its views under pressure, will be very much tempted, when doing the work, to say, It will cost us less to do the whole thing at once than to do it in twice, and this supply will have to be got rid of. I do not believe in sudden conversions.

20,408. Sudden conversions are, of course, always a little suspicious, you think. Then, in point of fact, it comes to this, that you say the London County Council ought not to be the purchaser of the water companies, because they will practically render useless the present supply?—They will do what they can to discard the present supply, that is my view.

20,409. So that they would be buying a bad thing, that is to be thrown away into the gutter when it is bought?—They would be buying a good thing, which they esteem a bad one, and would be throwing it away. Another thing, the business is so vast that it ought to be confided to a body having nothing else to do, and not to a body already overburdened with all sorts of work. Another thing is that the body to which it is confided ought not to be subjected to periodical changes by election, and having its conduct influenced thereby. I see that in the evidence before your Lordship, Sir Alexander Binnie states at Question 1118, in answer to your question, that he used it to the present authorised extent, but no further. Well, if a man will not use a thing any further, it means that he does not like that which he is using, I think.

20,410. Sir Alexander Binnie put that upon the ground that the risk was too great to increase the supply from the Thames?—Yes. Well, if he believes that to be the case with the Thames supply, I say that his evidence shows that it is not a supply that is accepted frankly and unreservedly.

20,411. On the other hand, do you know enough about the quality of Thames water to say whether it is a supply that may be accepted frankly?—I know it from being supplied by it—from hearing a good deal of evidence about it—from knowing intimately chemists who have given their opinion upon it, and above all things from seeing the weekly returns of the death-rate of London.

20,412. And all those show, in your judgment, that the quality is good?—Perfect.

20,413. With regard to quantity, have you been consulted about these storage schemes which are to make the quantity of Thames water sufficient for increase of population?—I was consulted originally by Messrs. Hunter and Fraser in conjunction with the late Mr. Thomas Hawksley, and we wrote a letter which appears in the Appendix of Lord Balfour's Commission approving of the proposal. I have not prepared myself to give any evidence upon it otherwise, because I thought it was a matter which would be already fully dealt with by Mr. Middleton and by Mr. Hunter.

20,414. But speaking broadly and generally, you do approve of that scheme of storage as being a sufficient one for the purpose?—I do, entirely. I entirely approve of it. The Staines, engineeringly speaking, are most favourable; but I do say that, in so far as their estimates of works have been based upon the rainfall of the year 1898, I do not concur. To my mind, there is no reason to do that; it is not fair to do that.

20,415. Surely, if a similar year were to recur, you ought to have provisions that would protect London from failure of supply?—Yes; and I suggest to you that those provisions should be made by diminishing the amount going over Teddington Weir for those exceptional years, and I do so for the following reasons:—If you left enough for navigation, which appears from the Appendix of Lord Balfour's Commission is only $3\frac{1}{4}$ million gallons a day, then what is the object of the remainder of the water? It must either be for purposes of amenity, as the Scotch say, or for the purpose of scouring, or something of that kind. Now, as regards amenity, that means the amount of surface water visible to the onlooker. The depth of it does not matter to him. So long as he sees the water surface it does not matter whether it is 2 feet deep or 4.

20,416. If he is in a boat it matters to him?—I was first of all talking of the amenity. I do not know whether you consider rowing an amenity, perhaps it is. What I meant was this, whether you have an inch of water going over Teddington Weir, or whether you have a foot, the area of land covered by water, and the water therefore visible to the eye above Teddington would not be appreciably increased. Now the same is true below Teddington, since that lock bridge has been put up below Richmond. That bridge holds the water, and whatever amount is going over, you have practically the same visible water surface to look upon. Then below that lock bridge the tide will practically rise as high, and will fall practically as low, no matter whether you have 50 million gallons going over Teddington or 200 or 500. Therefore, I say that in an exceptional year, a repetition of the year 1898, which may not occur once in 20 years, you might very fairly meet that difficulty, not by basing storage works upon that exceptional year, but by reducing the quantity then going over. Might I give your Lordship an analogy. The London main drainage was laid out by my friend Bazalgette years ago, and he laid it out so as to deal with the rainfall up to a certain point, that is to say, he laid it out to deal with a quarter of an inch per day and no more. Well, taking the rainfall roughly at 25 inches—it may be 24 inches or 26 inches—but taking it roughly at 25 inches, which is near enough for my purpose, that would mean, if the rainfall of a year fell in 100 days, he could deal with the whole rainfall. But he does not lay the works out to deal with a rainfall of one inch a day, or, as he puts it in his paper, one inch an hour occasionally. All that is got rid of by storm overflows, and nobody objects. Nobody for one moment thinks that money ought to be embarked in pumping engines, for your Lordship is no doubt aware that a very large part, I think the whole of the south side, and a very large part of the north side, sewage of London has to be pumped, and some of it twice. Now, no one would think of laying out capital in these enormous pumping engines to deal with a rainfall of one inch a day, or sewers to carry them, but they are quite content, when that exceptional times comes, to get rid of it by storm overflow. And I suggest to you, that with respect to the water supply, when an exceptional year like 1898 comes, they may be allowed to diminish the quantity which goes over Teddington Weir without harm to anybody. I believe there has hardly been a complaint from anyone this year in consequence of the reduced quantity going over, and it has fallen far below the suggested amount. Otherwise I agree with the works proposed by Mr. Middleton and Mr. Hunter.

20,417. Your observations seem to me—I do not know whether I am right—to point rather to an exception introduced in a year of stress, namely, cutting down the amount that goes over Teddington Weir in that exceptional year to 100 million gallons, rather than to a rule of only leaving 100 million gallons in ordinary years?—That is so, my Lord. That is my proposition.

20,418. One would have to invent, therefore, some authority who should be able to say—Now the time has come when you may deplete the Thames another 100 million gallons?—Well, there is the Local Government Board always at hand.

(Mr. Pember.) They are always capable of bearing an extra burden.

20,419. (Chairman.) Some authority would have to be devised to permit the exceptional depletion?—It does appear to me, my Lord, if we got a year like 1898, which may not come again for 20 years or more, it is unwise to construct works based upon that year when we have an inexpensive and wholly harmless mode of solving the difficulty.

20,420. (Major-General Scott.) The normal minimum put before us by Mr. Hunter is 100 million gallons?—Yes.

20,421. On your theory, provision ought to be made for a further reduction below the 100 million gallons in cases of exceptional stress?—Quite so.

20,422. (Chairman.) Below 100 million gallons?—Yes. I say as long as you have got your $3\frac{1}{4}$ million gallons for lockage in the case of exceptional stress, why are you to let this water dribble over Teddington Weir for no good to anybody, not even for the amenities?

20,423. (*Sir George Bruce.*) But you must base the extent of your reservoirs upon some minimum over Teddington, because the number of days which are pumped is based upon that. Now, Mr. Hunter has based his calculations upon leaving 100 million gallons going over—calculations based upon the year 1898. I suppose you would base the calculation upon a minimum of 100 million gallons, but not based upon the year 1898?—No. I wish, if I can, to make myself clear upon this. I wish to be allowed, if an exceptional year arises, and London needs it, to take the water from Teddington, all except what is needed for navigation, during, it may be, 10 days, or it may be 20 days only. But I say, to my mind, it is undesirable to incur extra expense for the mere purpose of having that ornamental water, for it is nothing more, going over the weir.

20,424. But still, you must come back to the fact that in estimating the areas of reservoirs to be reserved, you must base it upon some minimum flow, although I can understand, having made your reservoirs to that, and finding it come to less, your plea might come in?—I am quite content to take it in that shape, but a cypher is as good a figure as any other.

(*Sir George Bruce.*) But you must base it upon some flow.

20,425. (*Sir John Dorington.*) Mr. Hunter has given us two estimates—one on the estimate of allowing 200 million gallons to go over, and one on 100 million gallons?—Yes.

20,426. And he has made this exception, that he wants a provision so that he may go below that, that is to say, he may go down to his 100 million, or a much less amount if it is necessary. But the basis he has taken for his two estimates are, in the one case, 200 million gallons, and in the other 100 million gallons. Now, if you had the choice of those two given to you, which would you take?—Certainly 100.

20,427. You would take the 100 as being the more permanent?—Yes.

20,428. (*Mr. De Bock Porter.*) As being the more economical?—As being the more economical.

20,429. (*Sir George Bruce.*) And providing quite sufficiently for the Thames?—Yes, Sir George. I cannot, of course, question you; but the question is, What is it for? Is it for scour; is it for beauty? Beauty by the contrivance you have got, scour you get in flood; and, after all, the question between 200 and 100 is a very small one.

20,430. (*Mr. De Bock Porter.*) Would you not bring down the Thames, if your suggestion were adopted, to the condition of the Lea during this last year?—You mean no water at all?

20,431. Practically?—During such an exceptional year, yes—enough for lockage and no more.

20,432. (*Sir John Dorington.*) That is to say, you would have no water over Teddington Weir at all?—Quite so.

20,433. Only what is taken up by the locks?—Yes, in an exceptional year, mind you.

20,434. (*Chairman.*) The Thames would be reduced to a series of pools below the locks?—No.

20,435. There would be hardly any flow?—That does not make pools, my Lord. By pools, I understand a little bit of the bottom visible, and a hole with water in it. If you mean a succession of ponds between lock and lock, then true. It would be only lockage. It would be reduced to the condition, then, during the time, of a canal full up to the brim —

20,436. And below the lowest lock at low tide?—If you call Richmond foot-bridge the lowest lock, I agree.

20,437. There would be an expanse of mud?—Just as there is now, and no more. The difference between 100 million gallons going over Teddington Weir and through the foot-bridge and 200 is not appreciable in the way of low tide.

20,438. The difference between 100 million gallons and 3½, which is all you allow to go over in the case of emergency?—Even then, I say, that the tide ebbs out, and would ebb out just the same distance below Richmond foot-bridge, which is under the influence of the tide; and the extra quantity going over—such quantities as we are talking of—would not appreciably affect the level of low water.

20,439. Do you mean there would be no appreciable difference even to the eye between your 100 or 200 million gallons going over the lowest foot-bridge at low water, and only 3½ million gallons?—The difference due to a sort of rivulet in the middle of the river—I agree with that. Just see what the quantity is when you come to distribute it, and recollect that a great portion of that quantity goes out when the tide is up—when the tide is partially up.

20,440. Yes; I am speaking of the period of low tide?—Therefore, it is not as though you got your 100 million gallons, or whatever it is, concentrated upon the time when the tide is down. You do not get it concentrated then, and what I say is, that for 20 or 30 days in one year, or whatever it may be, occurring once in 20 years, the thing could very well be borne.

20,441. You say it is not worth the extra expense involved by keeping up the minimum flow of 200 million gallons?—You have put it in the way in which I wished I could put it. That is what I mean. And I gave you, as an analogy, the sewage.

20,442. I am not quite sure whether that is quite analogous. The storm overflow affects and hurts nobody, whereas this diminished flow of the Thames would leave only a little trickling rivulet and acres of mud?—I beg your pardon. But the suggestion was that the issue of the sewage into the Thames hurt everybody, and the whole effort was to keep it out. But even all those who were so urgent to keep it out saw the impracticability of keeping out storm water. The whole object was to keep it out of the Thames, so that I cannot agree that people did not think it hurt anybody.

(*Chairman.*) Yes, I quite agree. I was wrong in my question.

(*Mr. Pember.*) You see it is only 4 million gallons an hour, as I understand. It is not the whole day. The 100 million gallons goes down during the whole day. Therefore, dividing that by 24 hours, it is only at the rate of 4 million gallons, or thereabouts, an hour. As the whole thing occurs only three hours before and three hours after the low tide, it really only means that if you take away the whole it would be a loss of 4 millions during those six hours.

(*Witness.*) Yes, but that which I wished to make clear, if I could, was what time would the tide leave the bed of the river below the lock bridge bare, and it is only during that time that the quantity going down is appreciable.

20,443. (*Chairman.*) Quite so?—Because directly the tide rises to cover the bed, the condition of things is altered.

20,444. That is from five to six hours every tide?—No, my Lord, I should think nothing like it.

20,445. Not so much?—No, because the whole range of a tide from high to low is only six hours, and from low to high six, if you take them as usual, or thereabouts, and it is only the extreme low water that uncovers the bed of the river. I should very much doubt if it were two hours of tide.

20,446. Still, the result of taking everything except the 3½ million gallons would be that during those two hours there would be nothing left in the bed of the river?—Nothing; that instead of what I call a small rivulet going down representing the larger quantity there would be nothing during those two hours.

20,447. (*Mr. Pember.*) Instead of 4 million gallons an hour, which is at the rate of 100 million gallons a day?—Yes.

(*Chairman.*) You must make the same division for your 3½ million gallons.

20,448. (*Mr. Pember.*) No, taking it away altogether; it is a loss of 4 million gallons an hour?—Four million gallons an hour. May I put this to you? Objection made: exposing the bed of the river. Answer: If a quantity of 4 million gallons an hour comes down it comes down in a rivulet in the middle, and the whole of the sides are exposed. Objection: Yes, but you are going to expose the whole. The answer to it is: What then? You were getting nine-tenths exposed before, and you are getting it all exposed now.

20,449. That would seem to lend itself to the argument to let the whole 200 millions come down, and have a bigger rivulet?—I do not see why.

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20,450. I do not think anybody in London would like to see the Thames a mere rivulet?—It is a sentimental objection, entirely.

20,451. Then your view is that the removal of the Thames altogether is only a matter of sentiment?—I think I have heard something of traffic upon it. I am under the belief that there is a very large amount of barge and wharf property, and so on, upon it.

20,452. No barges will go up that rivulet, they will all be stopped?—They go up at high tide, not at that time of the tide.

20,453. You have been giving us your reasons to show that the Thames storage scheme may prudently and properly be calculated upon the lowest basis which has been laid before us?—Yes, I put it in that shape, and, to save myself, I say, and lower in an exceptional year.

20,454. Therefore, that is one of your reasons for saying that the London County Council are excluded as a proper purchaser, because they are inimical to the cheapest and best way of supplying London?—I believe them to be so. If they are really and truly converted, I withdraw that. But I do not believe in their true conversion when their representative says that it is a dangerous supply. If it be dangerous, it ought not to be used.

20,455. Now you have hitherto been proceeding by negative. You say the London County Council are not the proper purchasers?—Yes.

20,456. Is there any other authority or body you would exclude in the same way?—None occurs to me.

20,457. Now let us pass to the positive form of the inquiry. Cannot you fancy that the state of things might be improved if some single authority managed the affairs of the eight water companies?—I am not sure whether it would be an improvement or not that the whole of the eight companies should be fused into one body to manage it.

20,458. Is not the equalisation of water rates a desirable thing to achieve?—That, again, I am in great doubt about. Suppose you find high water rates on low-class property, and low rates on high-class property; there is an equalisation to some extent of payment there; not of rating, but you want an equalisation of payment. I am paying 5s. (I have made the computation many times) per 1,000 gallons for the water I use in my house in order that a man in some low part of London may get it for 2d.

20,459. For 2d. per 1,000 gallons?—Yes.

20,460. I think you will find that the average price received by the Southwark and Vauxhall is 5d. or 5½d. per 1,000 gallons. The East London, I think, is now a little higher; but it was lower. The Southwark and Vauxhall is 5·681 I see. Which is the company that is getting 5s. ?—The West Middlesex from me, because I have got a small family and an expensive house, and live principally in the country, and the water used there (I have computed it many times) costs me 5s. per 1,000 gallons.

20,461. (Sir George Bruce.) How many gallons a day does that give, do you know?—I took about 25 gallons per head and then added baths.

20,462. You assumed that, did you?—Yes, I have not put a meter up, but I have measured the baths and taken the number of them.

20,463. (Sir John Dorington.) For the time you were in residence?—The whole year round. I have a family of three persons only; two of them live in the country. I do not complain. I equally pay an inordinate rate for the pavement, street lighting, and so on. I do not use any more pavement; I do not use any more street light; but I pay a rate on my house; I do not complain.

20,464. What does Lambeth get per 1,000 gallons? Those are the highest rates, I think, if my memory serves me rightly?—After allowing deduction for empties, and so on, the net rate they get is 6·325d. per 1,000 gallons, or 6½d.

20,465. (Mr. Hollams.) The East London is only 4d. ?—It used to be 4d. The East London is 4·082d., and if that is got by means of an average, you may make your own calculation as to what the maximum payment is.

20,466. Would you regard an amalgamation of the eight companies as being of financial advantage to the

water consumers generally?—I doubt it. To my mind London is so large that the eight managements are entirely justified. What I mean is, if the smallest supply were given to a town it would be looked upon as perfectly proper that there should be a management to such a town as that. When you get up to a certain size I think management is entirely justified.

After a short adjournment.

20,467. (Chairman.) I think, Sir Frederick, we have had enough about the London County Council, but is it your view that you could not devise any authority into whose hands it would be financially expedient to put these eight undertakings? Supposing you had, for instance, a body of experts, either representative, either appointed by public authorities or by Government, or appointed in some way or other, but a body of experts whose sole business it should be to manage these water undertakings for the benefit of the consumer, do not you think financially in the result, the consumer would benefit from management of that sort?—I do not quite see why. I mean, we have got to start with the fact that income enough has to be derived to pay for the purchase. That is a thing to begin with.

20,468. Certainly, but I mean, to make no profit to anybody; not to give 10 per cent. to shareholders, or to pay back dividends, but simply to try and supply London in the cheapest and best way possible?—That being so, I do not see why the companies, being left as they are, or united in one body and able to raise the money upon the terms that they can now do, could not do the thing financially as well, and therefore as much to the benefit of the consumers, as a body of experts.

20,469. Except that it is for the interest of the companies in the first place to reach their 10 per cent. dividend, and, in the next place, to make up all their back dividends, and then in the third place to accumulate a reserve fund, and then, and then only, to reduce the price of water, whereas a public body administering the whole system with a view entirely to the interests of the water consumer, and without any shareholders to think of could avail themselves of any increase in their water revenue for the benefit of the consumer?—If we were to begin all over again, that might be so, but, at the risk of wearying you, I must repeat this: The 10 per cent. that your Lordship has spoken of more than once, and the back dividends and that kind of thing, will all have to be allowed for in the purchase. You cannot wipe them out unless you are going to be unfair to the companies.

20,470. Of course, they must be allowed for in the purchase. That is, the companies, if they are not to be unfairly treated, must get such a number of years' purchase as represents the probable durability of their present income?—And the prospective benefit arising therefrom.

20,471. And the prospective benefit, if you please. On the other hand, if the arbitrator does his duty, the purchaser will pay no more, beyond that present income or prospective increase, than it is really and fairly worth?—Quite so.

20,472. Therefore, the purchaser will get his money's worth?—His money's worth, but having got it at that price, I do not see where the economy your Lordship suggests comes in, because he could only deal with extensions, and I cannot see that this new body could deal with extensions with any more economy or any more in the interests of the consumer than the companies can and do at the present moment.

20,473. (Mr. De Bock Porter.) But the companies would make extensions for profit, whereas this body that his Lordship refers to would not. They would only do it in the interests of the consumer?—The companies' profit is that which they will get upon the money they borrow at the rate at which they do borrow it. They will maintain their rates, if that is what you mean; they will maintain their rates, no doubt, as assured to them by Act of Parliament, and if they did not, then you would borrow the money much cheaper.

20,474. (Chairman.) Take the company that charges you at the rate of 5s. per thousand gallons?—It does.

20,475. In fact, they do—they are paying their 10 per cent. dividend. They have now paid all their back dividends, and they are beginning to benefit the consumer only because they cannot help themselves. If

they could pay 11 per cent. instead of 10 they would?—If they were on a sliding scale like the gasworks.

20,476. But we have been told that is impossible with water?—I quite agree. But I mean, in fact, if they could divide 11 per cent. they would, but that was not the bargain with Parliament. The bargain with Parliament was that they should divide 10 per cent., and no more.

20,477. Would not the benefit be to the consumer if the growing profits of that undertaking were in the hands of a public body, whose sole object should be to benefit the consumer, as far as they can?—I am very sorry to say I cannot see it. Having the right to borrow that money as cheaply as a public authority can, I believe their management is superior to that of a public authority, and certainly to one made up of experts.

20,478. Do you think experts are bad managers?—Yes.

20,479. Then what sort of managers—ordinary business men?—Ordinary business men.

20,480. Why should not you have an authority of ordinary business men?—That was not what your Lordship put to me.

20,481. I thought a man, for instance, who inspects the business of an iron smelting company would not be the man to put at the head of water undertakings. That is why I said a body of experts?—Very likely he would be, because he would know whether the pipes were well laid or not.

20,482. Let me say of a cotton spinner, who is a business man, that he would not be the man to put at the head of a water undertaking?—That may be, but we know that in a trading company they put such persons at the head of them to-day.

20,483. (*Mr. De Bock Porter.*) But you just now referred to the possible profit the companies ought to be paid for, so that you had contemplated some profit over and above the bare cost of production in the future?—They will have the profit arising from the extra increase in the amount, if there be any, but it will be diluted in the way of dividend over the increased capital.

20,484. Do not you think it reasonable that any profit that will accrue hereafter should be for the benefit of the consumer?—No, I do not.

20,485. Why should we go on perpetuating giving to the companies?—I cannot follow you. The profit comes up on the rate they pay for the borrowed money. That is all. If they can raise money at 3 per cent., they cannot pay more than 3 per cent. upon it. If the supposed body can raise money at 3 per cent., it has to pay 3 per cent. upon that.

20,486. But just now you said that the companies must be compensated for their future profits?—Yes.

20,487. Then you contemplate future profits?—I contemplate future profits upon the present scale of shareholders.

20,488. Then if there are to be future profits, why should not those future profits go to the benefit of the consumer?—They would as regards the new capital that is required.

20,489. Only to the extent of the sinking fund clauses?—Oh, no.

20,490. (*Mr. Lewis.*) That would be simply after the maximum dividend has been reached?—Yes; but that is the bargain with Parliament at the present time.

20,491. (*Mr. De Bock Porter.*) Yes, but they have not all reached their maximum dividend at present?—No, but the bargain with Parliament is that they shall if they can.

20,492. (*Chairman.*) The question is, whether that is not a ruinous bargain for the consumer?—If that is so, the arbitrator has got to allow for it.

20,493. (*Major-General Scott.*) But not on future capital?—No. That is what I am trying to distinguish as the difference, if I may, which there is between me and Mr. De Bock Porter. What I am saying is that all future possibilities of profit would have to be paid for, and therefore the consumer would have to pay for that under any new régime. All profits depending upon the future capital could be as cheaply raised by a private body, such as we are thinking of, as by a public body, or within a $\frac{1}{4}$ per cent.

20,494. (*Sir John Dorington.*) Supposing a new main is laid for a new population, and the capital cost is raised at 3 per cent., and that main yields 10 per cent. on its commercial value?—Then, if so, it can only go to the shares which are yet unsatisfied as regards their dividend, and as to which the bargain was made by Parliament that they should have their dividend if they could get it.

20,495. That is to say, they would try to make up this 10 per cent., which is their limit?—Yes; and I say in the purchase of them the arbitrator would have to take that into account, and therefore you cannot start with a clean sheet. You are not starting from the beginning.

20,496. (*Major-General Scott.*) If there is to be a future expenditure of, say, 15 million pounds or 18 million pounds—double the nominal capital—for extension of works, you think the arbitrator should take that into account, and take the profits into account in determining the price at the present time?—No, I do not, because the 15 million pounds would be raised under the Auction Clauses, and the profits would be practically *nil*. They would be required to pay the interest on money raised.

20,497. But the company would not be satisfied with a mere 3 per cent.?—It is compelled to be satisfied. It has no power to divide any greater amount to the persons who have lent the 15 million pounds. It cannot help itself.

20,498. But would not it borrow that money or pay that interest at 3 per cent. with the hope of obtaining something more, so that it would be able to divide something among the shareholders as profit?—I do not see how it can. It could not do so unless it had to make up unsatisfied dividends upon the existing shares, and, in so far as that is concerned, the arbitrator would have to allow for it.

20,499. (*Mr. De Bock Porter.*) Your proposition would be true, would it not, if all the companies had reached their maximum, and paid back dividends?—It is equally true in the case I am reiterating. The arbitrator would have to take into account the probability of making these back dividends, and he would allow for it in the gross sum to be paid.

20,500. But in some cases there is very little prospect of getting it?—Then he would not get it.

20,501. But still they would absorb any profit there was to be got in the future?—And they are entitled to do so by the Act of Parliament.

20,502. (*Chairman.*) But the question is whether it is not expedient in the interests of the water consumer to say whether that state of things should not be done away with by Parliament?—It may be expedient in the interest of the water consumers if we did not consider the honesty of the case.

20,503. I am not suggesting that, but you do not deny if the companies spent in the next 20 or 30 years 15,000,000*l.*, even borrowed on debentures, that they will not from that expenditure get an increased profit which would be available for the benefit of their shareholders?—Yes, I am not saying that; I am saying they will, and I say that that being so the arbitrator, in determining the sum to be paid to the companies for the surrender of their rights, should take that into account, and let something be paid for it.

20,504. Certainly; but he would not carry his mind on to the indefinite future. He would only add a certain number of years' purchase, possibly?—May I remind your Lordship of a certain Stockton and Middlesborough Arbitration?

20,505. I am sure I have forgotten it?—In that case it was carried on to about 30 years, I think, and I think I remember the counsel who were engaged in it, too.

20,506. But if, at the end of 30 years, the prospective increase of income went to the benefit of the consumer, is not that worth securing?—I am dense, and I cannot go any further. If it is there it would be paid for, and therefore the consumer will have to pay for it, whatever it is. If it is not, then the question will not arise.

20,507. Then you would repudiate all such ideas as have been put before us as to cutting down the capital of the companies to what is effective capital at this moment, and eliminating all that is obsolete capital?—Certainly I should.

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20,508. It has been suggested to us that a vast amount of the capital of these different companies is represented by obsolete works, and is no longer effective in earning income, and that therefore it should be struck off the total share capital amount of the different companies?—I do not agree, and may I say why? May I give an illustration?

20,509. Do so?—Supposing it were to please Providence suddenly to discover at the head of the Thames a source of supply yielding four million gallons a day so as to render all these extra works unnecessary, and so on, and suppose the companies were able to take it. If they took it and earned their income, the thing they would have to sell would not be their works but their income. They are paid upon income, and not upon works. You may take the case of Waterloo Bridge being bought by the London County Council—not upon income—they are very fond of going upon works, but it they went upon income, and it was bought upon the receipts of toll, that being practically next to nothing, it would not cost much. Waterloo Bridge cost $1\frac{1}{2}$ millions, and it will cost a million to build. In that case you have got 470,000l. only. It is not, therefore, the works that are bought, it is the income—that, is the undertaking.

20,510. (Sir George Bruce.) Supposing the companies were to be sold to-morrow, what the companies would have to sell would be their income at the moment plus any possible increase of dividend upon the same capital as they have already spent. That is to say, you could not possibly, I imagine, take into consideration that they were to be paid for the 15 millions which was in prospect of being spent?—They would only be paid upon that money at the rate at which they had raised it.

20,511. Yes, but supposing that they were to be sold to-day, and it was decided to-morrow to go to Wales, or to spend a great deal more money upon the Thames Reservoirs, and so forth, what the companies would have to sell would be the interest or dividend which they draw at this moment, taking them all together?—That would be one thing that they would have to sell.

20,512. Supposing there is a prospect of their getting an increase of dividend without any further increase of capital, would they be entitled to that also?—Yes.

20,513. But not to the revenue upon a large increase of capital which might be expended, which would have to earn its own interest?—It would have to earn its own interest, but, as well as I follow the question, it is this: Supposing I am the arbitrator, and counsel says to me on behalf of the company, their profit income is so and so. It is rising at such and such a rate—

20,514. The income is rising?—Rising at such and such a rate.

20,515. Do you mean the dividend is rising?—Yes, the dividend is rising at such and such a rate. The profit income, I mean, which is dividend. He says, I claim, therefore, a certain number of years prospective. Now, I understand you, Sir George, to say, suppose the company says, in the year 1910, we cannot go on increasing or doing anything unless we raise more capital, say, at 3 per cent., and they say, if we do that then we shall get an income from it which will not only pay the 3 per cent., but can pay further dividends upon the shares, the share dividend upon which is not yet up to the hilt; if that is put before the arbitrator, I have no doubt the arbitrator would allow for it.

20,516. (Chairman.) Would allow for it?—Yes.

20,517. Would allow for capital not yet raised, and not yet authorised?—Yes.

20,518. And for the possible profits upon that capital to be raised in 30 years?—I do not know—no, not so long as that, probably.

20,519. I should have thought all that the companies sold were their present profits with its inherent probability of increase?—I quite agree, but then comes the question, what is embraced within the word "inherent." I mean, is not there embraced within the word "inherent" the probability of permission to raise new capital for the purpose of supplying their district.

20,520. (Mr. De Bock Porter.) Take the case of the West Middlesex Company, where they have reached the full amount of their dividend, and where any future profit is to go in reduction of the consumers' price. Would you say there that if they were going to raise more capital they would be entitled to some further compensation?—No, because by hypothesis they cannot

divide a shilling more, and therefore all that they could divide would be the interest upon the new capital.

20,521. And if they got their present income, they would be fairly paid?—Certainly. If they got all their present income, I should think they would be fairly paid, certainly.

20,522. Then it is only in the case of a company that has not begun to make any rebate to the consumer?—I think so. I do not see where a company paying its full statutory dividend can get any further profit over and above the expended capital than the mere interest upon the capital at which that capital is raised.

20,523. (Chairman.) That is not a profit. That is only a repaying?—That is only repaying. The shareholders' dividends were originally the same thing. It was only repaying the man the interest alone at which he lent the money on the undertaking.

20,524. (Mr. Lewis.) Supposing this additional capital that has to be raised is unproductive, then, I suppose, an arbitrator would have to take that into account on the other side? You know, if a larger amount of capital is being raised now with a view of maintaining the companies' profits in their present position, they will have to pay 3 per cent. interest upon that capital and that capital may be unproductive?—Yes, I quite follow you.

20,525. That would have to be taken into account on the other side, would it not?—I can quite follow you. I can quite see the difficulty.

20,526. Looking at the uncertainties of the future, would not it be much better to take the net income of the companies now as the basis of the purchase money, without going into the future at all?—I do not know. That is a matter that I cannot answer you upon, because it requires the consideration of the position of the whole of the eight companies as to whether or no it would be a desirable thing to do. I quite follow your question and I can see that in the arbitration for the purchase of the companies the purchaser would put forward the proposition that you have put forward now as a probable one. Take for example the need of increased capital for the mere purpose of maintaining quality and not adding to quantity in any way or to customers. I can understand that in the purchase arbitration the purchaser would say, I claim a deduction in respect of this danger.

20,527. (Chairman.) No doubt—for instance, to complete such a system of storage as will enable the companies adequately to secure their present supply of water, the necessary expenditure for that purpose ought to be a deduction, I suppose, from the price?—I should say that would be the argument, and I am very much disposed to think an arbitrator might think it a valid argument.

20,528. Yes, I am not saying what weight he ought to give to it or what effect he ought to give to it, but he ought to give some effect to it?—Yes.

20,529. Take the case of the East London Company. The East London Company want to spend I do not know how much more upon storage, and to keep up their present supply and without increasing their income a farthing—that circumstance ought to influence the arbitrator and diminish the price the arbitrator would allow?—It would, I believe, militate against the purchase price.

20,530. On the other hand, I am in a difficulty in following your view that future likely profitable expenditure is to increase the price. If you were buying a railway company, could you listen to that railway company saying, next year we will open a branch from such and such a town to such and such a town, and that will only cost us so much and it will bring us in so much?—I believe an arbitrator would have to listen to it. How he might be influenced by it afterwards I do not know.

20,531. I am afraid we have had to listen to a good many things here that do not influence us much. But, however, you have been telling us the *pros* and *cons* about purchase, and I suppose you are aware that it is a very common impression in the public mind that the companies have not quite come up to the standard of what I may call their duties, or, at any rate, of what is expected from them?—I am aware that two years ago there was a newspaper view of that kind, but I think that has rather died out now when the facts have come to be better known.

20,532. You think it is not even well founded, then ?
—I do not think it is well founded.

20,533. Do you think, for instance, the companies have shown that due foresight in the extension of their works and in making provision for the future which might have been expected from them if they had had the interest of the consumer at heart ?—I am not aware of any instance to the contrary. I should be very happy to deal with one if your Lordship would suggest one to me.

20,534. Let me take the East London Company. I do not want to say anything invidious about any company, but still there have been, apparently, at least, considerable failures in the case of the East London Company to give the desired and expected supply ?—I have already—I forget how, but I suppose incidentally somehow, in answer to one of your Lordship's questions—said that the East London Company has been very hardly treated.

20,535. By Professor Stuart ?—By the people who put Professor Stuart in motion—that is, the London County Council. I do believe that when the Company came to Parliament in 1893 and said, we want to expend capital in order to maintain our supplies, and Parliament would not even listen to them upon the motion of that gentleman, that they were very hardly treated.

20,536. (Mr. Pember.) I see that Professor Stuart did say in Parliament that he spoke for the London County Council ?—Yes, he did.

(Mr. Pember.) I have got Hansard here.

(Chairman.) Very well; did he say why the London County Council opposed ?

(Mr. Pember.) He made a long speech.

(Chairman.) I do not want to hear his speech.

(Mr. Pember.) He says: "I do so on behalf of colleagues many of whom represent districts affected by this Bill, and also on behalf of the London County Council, which, by a resolution passed on the 7th instant, negatived a proposal not to oppose this Bill."

20,537. (Chairman.) There might have been all sorts of reasons for that, and the view of the London County Council might have been that the company were going to expend the money injudiciously, and that it was far better to allow them to buy the company and spend the money themselves judiciously ?—In the meantime London must starve for want of water.

(Mr. Freeman.) Your Lordship has ruled that out on several occasions. We never had an opportunity of going into that.

(Mr. Pember.) But, however, we were told that they did not oppose the Bill, and that is why I read that.

(Mr. Freeman.) I quite understand you reading the bit you want.

(Mr. Pember.) You can read anything you like. He goes into all the circumstances of the Bill. We propose to show that by that the details have been given at the request of the County Council to the County Council. Having said what I have read, he says there is no urgency.

(Mr. Littler.) He goes on to deal further with it. He says: "A suggestion is made that the Company require more storage power. Is the East London Company in a peculiar or backward position in this matter ? I find that while the average supply in London in 1891 is 32 gallons per head per day, the supply by the East London Company is 35.90 gallons, or close upon 36 gallons per head."

(Mr. Freeman.) I think this is rather against your Lordship's ruling. Your Lordship has directed us not to go into it, and it is not right to have bits read like that.

(Chairman.) Yes, I agree, I think I must allow you to exceed the limits if you desire it.

(Mr. Freeman.) I am perfectly content with that as it is, my Lord.

20,538. (Chairman to Witness.) I may as well ask you your opinion about the Sinking Fund clauses as you are here ?—I have desired once or twice to go into that before a Parliamentary Committee, and I have been implored by the Chairman not to go into it. I really hardly know how to speak of it with temper.

20,539. But you can control yourself, surely. It is not a very impassioned subject as far as I can see ?—I

think it is. I think it must have been the invention of some evil power whom I will not name. It is a contrivance by which when an unhappy company is endeavouring to raise money for the purpose, as you have suggested that it may be needed for, of extra storage, or filtration, or something of that kind, which is desired to maintain the quantity or add to the quality of the water—it is a contrivance by which instead of the company being allowed to do so at the ordinary prices at which they could get the money (and even then remember it must result in a reduction of dividend if these works are not to be productive), there is put upon them a fine which comes to this. I think I am right in saying that in the case of the New River Company, it would cause money to be raised at 8 per cent. instead of 3 per cent., and that appears to me to be so monstrous a proposition that, as I say, I find it difficult to speak of it with temper.

20,540. Is it quite so strong as that ? Suppose a company comes to Parliament and says, allow us to borrow a million, we want it for profitable works ?—May I eliminate the word "profitable" ?

20,541. If you eliminate the word "profitable," then I agree the whole ground for the Sinking Fund clauses is gone, but I think it must be assumed that they are profitable. That is the assumption—that it is going to be spent in a profitable way—as profitable a way as the rest of the capital of the company ?—But no more, as I understand.

20,542. No, no more. The company is earning, we will say, 8 per cent. dividend on the rest of its capital, and why are you to assume that this million is not also going to earn 8 per cent. Then suppose Parliament says, we shall not allow you to put the extra 5 per cent. into your pockets. You come to us to grant you this power and we say, you may raise your million, but you shall pay into a sinking fund the balance between the interest you have to pay for the loan, and what you, by your own showing, are earning upon your capital.

(Mr. Pember.) Whether it is profit or not.

20,543. (Chairman.) Minus 1 per cent. for management ?—That extra money that you suggest is to be earned, and with regard to which you talk of the sinking fund, is only earned by a reduction of existing dividends upon the previous capital.

20,544. That is assuming that the new expenditure is not a profitable expenditure ?—Quite so.

20,545. There, I will not ask you another question on it. I agree, if the expenditure is not profitable, the Sinking Fund clauses are, perhaps, a little harsh ?—Perhaps.

20,546. But if it is profitable, what have you to say against the theory of the Sinking Fund clauses that Parliament should say to a company: "No, you are well enough off; you have got so many millions of capital, and with this tremendous addition of 10 per cent., and the back dividends, and the reserve fund, and the increased quinquennial valuation, and all the rest, we do not think you should have any increased capital on these terms" ?—I have a very good answer.

20,547. What is it ?—They would say: I am no better off than when I set up and embarked in this undertaking.

20,548. But Parliament is now of a different mind, and says, You shall not add to the capital on different terms ?—The terms that you add are, that you shall reduce the present dividend to which you are entitled, and reduce the power of extension to which you are entitled.

20,549. That is always on the assumption that the new expenditure is not a profitable one ?—Quite so.

20,550. Then we will not argue that case; but if it is a profitable one, where is the hardship in Parliament saying to a company: We are not going to give you the opportunity of raising capital upon these exorbitant terms any more ?—If the effect of the increased capital and of the Sinking Fund were to leave the former dividend untouched and undiminished, then I might agree with you; but when the effect is to diminish that dividend upon the old shares, or to stop the prospect of increasing the dividend up to the power allowed, then I do not.

20,551. Then it is an instance of Parliamentary bad faith ?—Quite so.

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20,552. (*Mr. Pember.*) It stops the progress towards the 10 per cent. P—Yes. That is what I meant to say. Then I will not labour that point any more.

20,553. (*Chairman.*) No, I think we pretty well understand it?—I do not know whether I might hand in a letter I wrote to the "Times" newspaper on the subject as to a supposititious company. I do not propose to read it to you now.

20,554. I would rather have your own words now. Anything that goes into the "Times" is so suspicious?—That is when there is not a signature to it; but there is here.

20,555. (*Mr. De Bock Porter.*) But Parliament has always insisted on the insertion of these Sinking Fund clauses in any new Bill, has it not?—Yes, certainly; I mean, once commit a blunder and you stick to it. That is the answer to that.

(*Mr. Freeman.*) Ever since 1886.

(*Mr. Pember.*) That is ever since purchase has been in the air.

(*Mr. Pope.*) And always on the understanding that purchase was coming about.

(*Mr. Littler.*) It is in nearly every clause recited.

20,556. (*Chairman.*) I think, if you were called in to advise Parliament, you would hardly—P—I can hardly imagine such an honour as that.

20,557. But if you were, you would hardly advise them to sanction the raising of capital upon the terms that have been conceded to the water companies in 1852, and in the earlier years, would you?—Not upon 7 per cent., or anything of the kind. I am so sorry I cannot make myself perfectly clear. I feel perfectly clear in my own mind; but I cannot make myself clear to your Lordship. All I am saying is that that which has been done is done, and must be adhered to, and that which is to come will be done upon present terms.

20,558. (*Mr. De Bock Porter.*) The effect of these Sinking Fund clauses is, that it will moderate the prices of the companies' undertakings, if purchased, is it not?—I have no doubt of it, because it reduces their dividend on the existing shares. It is monstrous.

20,559. Parliament did it in the interests of the consumer?—I do not think so.

20,560. (*Mr. Pope.*) In the interest of the proposed purchaser?—It might be in the interest of the proposed purchaser.

20,561. (*Chairman.*) Yes?—I think if the father of evil ever had an unoccupied day, he filled it up with making the Sinking Fund clause.

20,562. (*Mr. Lewis.*) I suppose the great objection to it is this, that when a company raises capital for any purpose, whether that capital is to be productive or otherwise, Parliament steps in and punishes the existing dividend of the water companies?—That is precisely it.

20,563. That is, if a company presumes to apply for additional capital, then the existing dividend must suffer?—Quite so, even although the works are absolutely unproductive.

20,564. (*Sir John Dorington.*) Unless the works are profitable?—Yes.

20,565. (*Mr. Lewis.*) Who is the author of that?—I say the father of evil, but I am sure I do not know.

20,566. (*Chairman.*) What human shape did he take?—I do not know.

(*Mr. Pember.*) He took the shape of Lord Claude Hamilton.

(*Mr. Pope.*) Or Professor Thorold Rogers.

(*Mr. Pember.*) Here is what Lord Claude Hamilton says: "The Committee while adhering to the general principles they had announced for the protection of the public in view of the ultimate acquisition by the public of the water undertakings, did not wish to be at all unjust to the present proprietors."

20,567. (*Mr. Lewis.*) I had an idea that Sir Joseph Pease was the author of it?—Oh, no.

(*Chairman.*) It was long before him.

(*Mr. Freeman.*) I think you are thinking of the fact that Sir Joseph Pease did take an immense amount of trouble over that clause and tried to make modifications in it.

(*Witness.*) I do not believe one Member of Parliament in ten knows the real meaning and scope of it.

20,568. (*Mr. Lewis.*) Your letter explains that very clearly?—I did not know that was within your cognizance.

20,569. (*Chairman.*) I will not trouble you about the subject of inter-communication?—It is practically settled, as I understand.

20,570. Yes, we have practically concluded that. I do not know whether you can make any suggestions to us upon the subject of control?—If General Scott, for example, visits the works only by the courtesy of the companies, although I believe it has been perfectly effective, I agree in the proposition of Lord Balfour's Commission that he should visit them by authority.

20,571. Do not you think that it might be advantageous to give such bodies as county councils powers of control over the companies that serve their districts?—Most certainly not. I can give you a case that happened the other day with regard to a town in East Surrey with a neighbouring water company to my own. The vestry there sent a medical officer, the medical officer was busy, and he sent his helper. His helper came tramping through some fields that had been manured with town manure, and he took his sample, which was sent to the medical man with a tremendous lot of bacteria, and so on. It was known to be a pure chalk water supply in that case. When it came to be looked into, it turned out that this man had come in this filthy condition to take the sample. I mean even taking a sample of water is an art, and it cannot be done by the first comer, and I think it most undesirable that there should be anybody sent about the place except some official duly appointed for the purpose.

20,572. But do not you think a great body such as the London County Council would send a health officer or somebody competent?—If they did that, that would be all right, but I do not want the County Council or its members to be walking about—I do not want the Chairman of the Water Committee or of a distribution committee, or something of that kind, to be meandering about the place.

20,573. I do not know whether you can say that the existing regulations are sufficient to secure good quality in the water?—They have done so, at all events, but I doubt whether the eight companies are not more controlled than any other bodies. They have got the control of the Acts of 1847, the general and the Metropolis Acts of 1852, 1871, and 1897.

20,574. Unfortunately, you see, we have had it in evidence before us that nobody seems to pay the slightest attention to any one of those enactments, and they leave them all absolutely on the shelf?—Is not it the fault of the persons who are put there to put them in force?

20,575. It may be that the machinery is so inconvenient, or so clumsy, that a better machinery should be devised; but you cannot help us with suggestions about that, can you?—No, my Lord. I say the result at present has been uncommonly good water.

20,576. It has been uncommonly good water, but there has been shortness of supply and failure in bringing any pressure to bear upon the companies. For instance, we have heard of considerable suffering and distress in East London, and yet it has been nobody's business to put things right or to exact penalties from the companies?—I think penalties exacted in that case would be perfectly unheard of.

20,577. Do you mean that London is to be without remedy if it cannot get a bath or a cistern full?—Yes, if Parliament says so by refusing the measures that would give the water, or by not paying attention to it.

20,578. Yes, I daresay?—Then I come back to that, and I cannot help it. It comes back to that.

20,579. Then, in fact, you can suggest no better control, or no additional control, to the present one?—No. I think the present control is very good; and if it is only a matter of courtesy, I say it ought to be a matter of right.

(*Chairman.*) That is all I ask you.

(*Mr. Pember.*) It might be worth your while, then, that I should call your attention to what Mr. Haward himself said about the retention of the sinking fund. It is at Question 2773.

(*Chairman.*) Before us?

(Mr. Pember.) Yes.

(Chairman.) I have not forgotten what has been proved before us.

(Witness.) May I say, in regard to my answer to you about the collection, that it did not occur to me that the collector would require a poundage—that he would not do this extra work for nothing.

(Chairman.) I do not suppose he would.

(Mr. Pember.) They are paid by poundage now.

(Chairman.) I do not know what the poundage is.

(Mr. Pember.) I think all rate-collecting is done by poundage.

(Chairman.) Yes, but I do not know what the poundage is on the rate.

(Sir John Dorington.) Are the rate-collectors paid by poundage? In the country it is not so.

(Mr. Pember.) In London it is so.

(Mr. Pope.) I do not know how it is done by the County Council.

(Mr. Freeman.) They are paid by a salary.

(Mr. De Bock Porter.) I thought so.

(Chairman.) They would not take on extra duties without an extra salary, I suppose?

(Mr. Freeman.) Probably not.

Cross-examined by Mr. FREEMAN.

20,580. Do you approve or disapprove of the principle of applying rating for the payment of water?—On sanitary grounds, I think it is probably the proper principle, although it is a very socialistic one.

20,581. Applying that principle, do you say that in a place like London the unequal ratings which do prevail are justifiable?—I have not analysed them, and I do not know the way in which they prevail. It may be that they are perfectly justifiable and it may be not.

20,582. You know, no doubt, as a fact, the rating in the different districts of the water companies is very unequal indeed at present?—I have heard so. I mean I have not gone through it.

20,583. You have not at all directed your mind to that question, have you?—No, I do not know whether you will have finished with me this afternoon, but, if not, anything further you ask me upon it, I can look into between now and the next time I am here.

20,584. I daresay you are aware that it so happens, as a rule, that the higher rates are in the poorer districts?—I am very glad to hear it. It should be so.

20,585. Why?—Because the property is of so poor a character that the result is that the people get their water on giving to the unhappy company that furnishes it a net revenue of 4d. per thousand gallons.

20,586. Is your answer given from the point of view of the shareholder or the consumer?—Justice.

20,587. Which is that?—Both.

20,588. Both?—Yes.

20,589. Then you might have spared us the introduction of a third element. I understood you to say that you consider, taking the instance of London, the water companies made a very fair unit by which to measure an administrative body—that is to say, a company or a fair sized body to administer the water?—Yes, I think so. I think the magnitude of the place is so great.

20,590. But when you say that, what sort of place have you in mind—a company which has a district, we will say of 270,000 or 280,000 people, or a company which has a district of a million?—All.

20,591. It makes no difference what the size is?—No. You will find that is not my position. My position is that even the smallest of them justifies separate control.

20,592. And the largest?—It certainly justifies separate control. Whether it would justify divided control is another question.

20,593. In your opinion, supposing, as has been suggested more than once in this inquiry, the companies were to amalgamate, do you think that would be a satisfactory unit of control?—I think it might be made so. I think if they were to amalgamate for certain purposes, it might be so.

20,594. How do you mean?—Such as the provision and storage of water, leaving the distribution to the individual companies, they might do very well.

20,595. And amalgamate for the reduction of charges?—If they could properly.

20,596. How do you mean properly?—Consistently with it being their duty to those who advanced the money, and Parliamentary faith.

20,597. If the companies amalgamated into one to carry on the control, why could not a body to be elected, or a council, equally well do it?—I think some body to be elected or a council might equally well do it.

20,598. Then your suggestion is not that the companies in no case should be acquired and a municipal body carry it out, but you object to certain particular ones?—No, my objection is not that they should not be acquired, because I do not see any benefit in the operation, but taking the fact that somebody is determined that they shall be acquired, then I have a particular objection to a particular body.

20,599. You would hardly like to see anybody carrying on the supply of London with water without acquiring the companies first, would you?—No, I mean it would be a greater fraud than ever—certainly not. I may say that in years gone by, when Sir Joseph Bazalgette went for a separate Bill for culinary purposes, I would not have anything to do with it, unless we introduced into it a clause that the persons taking the supply should also take the water from the water companies. I would not have a competitive supply.

20,600. You are speaking of the Report that you and Sir Joseph Bazalgette made to the Metropolitan Board of Works, I think?—I suppose so.

20,601. I think the passage which you rather have in your mind is this—I will just read it to you to see whether it is so, "We have now (at too great a length, "we fear, but still, as briefly as we were able) laid "before you the principal difficulties which must be "overcome, the outlay that must be made, and the "annoyance that must be borne, before the inhabitants "of the metropolis could, upon any system heretofore "devised, enjoy the advantages of having water from "unsuspected sources, for the purposes of drinking, "and at adequate pressure, and in sufficient quantity "for the purpose of extinguishing fire—difficulties, "outlays, and annoyances which would exist even if "the waterworks were in the hands of the Metropolitan "Board; but we have felt bound to make this statement "in order to enable the nature of the plan which we "are now about to submit to you to be properly "contrasted with the modes which have been previously "suggested." Is that the Report that you were referring to?—No, I was referring to the Bill.

20,602. Did you make a Report in 1877?—I am sure I do not remember now. If you tell me I made it, then it is so. I recognise the phraseology of that Report, but whether it was in 1877 or not, I do not know.

20,603. It is dated the 9th May 1877?—Then I will say I made a Report in the year 1877.

20,604. That was a "Report by Sir J. W. Bazalgette, "C.B., C.E., F. J. Bramwell, Esq., C.E., and E. Easton, "Esq., C.E., upon the best means of providing an "efficient supply of water for extinguishing fires, and for "other purposes." The passage I have just read occurs in it?—No doubt, but that which I said does not occur in it, because it was in the Bill.

20,605. Is your objection in this case to transferring the water undertakings to any municipal authority, confined solely to London, or is that a general objection?—I do not know. I should like to determine each case by its own merits.

20,606. You are aware, of course, that in recent years an enormous number of these undertakings have been transferred to municipalities?—Perfectly.

20,607. Do you approve of that?—I do not know. I do not approve if they are transferred compulsorily. If it is done by agreement, I approve. But I do not know whether I should approve if I were a ratepayer of the town.

20,608. Do you know that in a good many of the instances it has been done compulsorily?—No, I think that is not so. I have not been into it quite lately—not to a few years, but when they came to be proved, I think there was not a single instance in which it was done compulsorily.

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20,609. Do you mean to say that there is not a single instance of where a water undertaking has been transferred to a municipality compulsorily?—No, I mean to tell you I have not been into it for the last few years, and I will not say so; but I will take the case known as the Stockton and Middlesbrough case, which I mentioned this morning. That company was asked to find another source of supply than the River Tees, which was alleged to be faulty. They refused to find it. Then the Corporation promoted their own Bill, and came to Parliament, and under stress of the refusal of the company to do what they said was needed, they got their Bill, and the transfer was made. In so far as that was compulsion that was the case; but that was the object of it, and that river, which was supposed to be unfit then—I suppose 20 years ago now—is still supplying the population under the control of the municipality.

20,610. Have you followed at all, in the cases where water companies have been transferred to municipalities, what the effect has been upon the charges?—No.

20,611. You cannot tell me whether, in the majority of cases, there has been a large reduction in the price charged for water?—No, I cannot. As I have mentioned, I have the case of Liverpool in my mind, where, if I am not mistaken, they had to come to Parliament for a rate upon properties not taking water—a rate-in-aid—to supplement the charges to those who did take water.

20,612. By the way, as you have mentioned that Stockton case, is it not the fact that that water which you have referred to is only being supplied for trade purposes?—I do not believe it for one moment.

20,613. But do you know anything about it?—I know what was, and I have never heard of a change.

20,614. Do you know what is?—I believe it is all supplied in one—if you tell me that it is not, I will accept that—but I think that you will be puzzled to do it.

20,615. Now I want to ask you one question about the future capital which you spoke of. Do you agree with Mr. Middleton that any future capital which the companies require to raise they should be entitled to raise either by debentures or by shares, as they think best?—I have not thought about it. I do not know what Mr. Middleton said.

20,616. What would you say, leaving Mr. Middleton out altogether, and whether you would agree with him? Do you think it would be desirable that the companies should have, in the future, a free hand to raise their capital either by debentures or by shares?—No, I believe that they should be compelled to raise it in the way in which they could raise it most cheaply, which, I presume, would be by debentures. If you can show me that by doing it by shares it would be done more cheaply, then I should say shares.

20,617. As a matter of fact, during the last few years Parliament has made it a condition that new capital should be raised by debentures, has it not?—I believe so, supplemented by the Auction Clauses, which, therefore, causes it to be raised at the lowest commercial value.

20,618. Now, in answer to a question which my Lord put to you, I understood you to say that you thought it exceedingly unjust that an arbitrator, in estimating the value, should write off obsolete capital?—Yes.

20,619. Do you know that is exactly what Parliament did in the year 1852?—No. I have heard very often that that is so, but I believe it turned out to be absolutely false—that it did not do it.

20,620. That is your view. Now there is one other matter I want to refer to with you because it has been referred to more than once—I mean a certain letter which appears on page 476 of the Appendices to the Balfour Commission?—Yes, that is the letter of Mr. Thomas Hawksley and myself.

20,621. I think it will be convenient if I just read the letter, because it is unfair sometimes taking out one paragraph. This was a letter from Mr. Hawksley and yourself, was it not?—Yes.

20,622. It is dated the 20th September, 1892?—Yes.

20,623. That letter was referred to at Question 20,150 of the evidence of Mr. Hunter when he said his report was made in 1892. “Quite irrespective of this enquiry which you are holding here, and at the same time that was confirmed by Sir Frederick Bramwell and

“Mr. Hawksley in the letter to us of 20th September, 1892, which has been already referred to.” Now I see this is the letter which was referred to:—“We have carefully considered your proposal for increasing and otherwise improving the capabilities of the River Thames for the supply of the metropolis and its vicinity, when and as may be wanted at any time or times during the ensuing 50 years, and we are pleased to have the opportunity of stating that we approve in general terms of that proposal. As to the quality of the water, we think you are fully justified in relying on the evidence of the cited chemists. With respect to the capability of the Thames, when aided by the suggested storage reservoirs, to afford a supply of 300 million gallons per diem for waterworks purposes, while leaving a minimum of 200 million gallons per day to flow over Teddington Weir, we have no doubt that these quantities can be obtained by the suggested means, but we are of opinion that so large a quantity as 300 million gallons per day for waterworks purposes will not be required even at the end of 50 years.” So that at that time the basis was leaving 200 million gallons to go over Teddington Weir?—Yes, the basis put before us.

20,624. “We think that if the water of the Thames be derived and stored as proposed, and be afterwards filtered in the usual manner, it will be improved, and will be free from any stain due to floods, and we are further of opinion that no sensible deterioration of its quality would occur, even if flood water were occasionally pumped into the reservoirs. It would settle and bleach.” You there only contemplated that the flood water would be taken in as a very exceptional matter?—We contemplated when taken that it would do no harm, that was all.

20,625. Yes, but you say “were occasionally pumped into the reservoir”?—Quite so.

20,626. Obviously, therefore, you did not think of it being often done?—No.

20,627. You would not approve of its being often done, would you?—With my present knowledge, I should.

20,628. Although you did not then?—Although I did not then. The matter was hardly before us, because we were following on the proposition laid before us. We were not discussing that proposition except in so far as it was a feasible and proper one.

20,629. “With regard to the proposition to bring the suggested 210 million gallons per diem supplemental water from Wales, we are of opinion that it would not be feasible to do this by means of an open channel, and, further, we are of opinion that such supply would certainly involve an outlay of at least 30,000,000/.” Where did you get the figure of 30,000,000/ from?—My recollection is that we got it from the then 1892 expenditure (I think Vyrnwy was finished); then the Vyrnwy was known expenditure and the Thirlmere was contemplated expenditure.

20,630. Then it was by analogy?—By analogy.

20,631. You had not made any surveys or got any facts upon the ground?—No, not at all.

20,632. “In conclusion, we beg leave to express our opinion that the sites proposed for the reservoirs are suitable for their intended purpose, and that the reservoirs are capable of being constructed at a moderate expense; and we think that this project may very properly be placed before the Commission as one, amongst others, to show that the watershed of the Thames affords ample facilities for increasing the supplies of water to the Metropolis, when and as they may be required, and we will willingly support this view by our oral evidence if your Board, on further reflection, see fit to call upon us for that purpose.” Tell me, until to-day, so far as you are concerned, has it ever been suggested, either to a committee of Parliament or to any inquiry, that a less amount than 200 million gallons might be left to go over Teddington Weir?—I do not know what has been suggested before this Commission. I think I suggested in the Staines Bill, and I think I suggested in my evidence before Lord Balfour’s Commission, that I did not see any reason why it should not be much more reduced.

20,633. Did you suggest that before Lord Balfour?—I think so, but if you will let me say I am not sure at present, I will refer. I am almost sure I remember

some such evidence, though for my part I do not see why it should not be reduced.

20,634. Did you give evidence when the Staines Bill was before the Committee of Parliament?—Yes.

20,635. Did you suggest then a less amount than 200 million gallons?—I do not remember; it may have been before that Committee and not before Lord Balfour.

20,636. But, of course, you know what that Committee did as regards the limit?—The Staines Bill?

20,637. Yes?—The Staines Bill imposed, I think, a minimum at Bell Weir below which minimum the Staines reservoir people should not be allowed to take any water.

20,638. (*Mr. Pope.*) That is the action of the Committee which was proposed by the promoters after arrangement with the Thames Conservancy?—Quite so.

20,639. (*Mr. Freeman.*) You know from the evidence which they have given, both on that occasion and on the Southwark and Vauxhall Bill, that the Thames Conservancy, by their engineer, required at least 200 million gallons to be left at Teddington Weir?—I believe so, but I do not know that he gave any reasons for it.

(*Chairman.*) Unless you have something further to ask Sir Frederick Bramwell, we need not trouble him any more. (*To the Witness.*) We are much obliged to you for coming.

*Sir F.
Bramwell,
Bt., F.R.S.*

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The witness withdrew.

[Adjourned to Monday next at 12 o'clock.]

FORTY-SECOND DAY.

Monday, December 19th, 1898.

19 Dec. '98

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

Sir GEORGE BARCLAY BRUCE, Kt., C.E.

ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.

HENRY WILLIAM CRIPPS, Esq., Q.C.

ROBERT LEWIS, Esq.

OECIL OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.

Mr. Pope, Q.C., and Mr. Claude Baggaillay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.

Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.

Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.

Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

(*Mr. H. W. Cripps to Mr. Pember.*) I have not before had an opportunity of asking you a question which is of importance to me. I am only speaking to you as an individual—not at all on behalf of my colleagues. I think you said when you appeared here first that you represented not only one, but four companies?

(*Mr. Pember.*) I do.

(*Mr. H. W. Cripps.*) Do those companies hold annual or half-yearly meetings of their shareholders?

(*Mr. Pember.*) I think I may say all do.

(*Mr. H. W. Cripps.*) At these half-yearly meetings, or prior to those half-yearly meetings, do you circulate or send round a financial statement of what has been going on during the last half-year?

(*Mr. Pember.*) A report is sent, I assume, of the ordinary character of such reports of public companies. A report is sent, I am told, with the half-yearly accounts as audited by Mr. Stoneham.

(*Mr. H. W. Cripps.*) I imagine that they are correct, as they generally are. Those are not secret documents, are they?

(*Mr. Pember.*) Oh, dear, no.

(*Mr. H. W. Cripps.*) Is there any objection to my seeing them?

(*Mr. Pember.*) Not the slightest, sir.

(*Mr. Cripps.*) I should like very much to do so, for several reasons.

(*Mr. Pember.*) Certainly, sir.

(*Mr. H. W. Cripps.*) As you represent so many of the companies, you are the proper person to apply to.

(*Mr. Pember.*) I will take care that four of them are furnished to you. I am told by one of the solicitors who instructs me, that they are Parliamentary papers, but, whether they are or not, you shall have those four certainly; and I think I may go further, and say you might have those of any other company you please.

(*Mr. Pope.*) You have only to ask for the reports of all the companies, and they will all be supplied.

(*Mr. H. W. Cripps.*) Shall I collect from them—that is the one thing I want to know—how much is debenture stock, and how much is preference stock?

(*Mr. Pember.*) Yes, sir, that is shown on the face of the accounts. It struck my mind two or three days ago that you might at some time like to have a general statement of what the capitals of the various companies were, and the interest that they bore respectively; I did it for myself in the rough up to a certain point, but beyond a certain point, with such papers as I had before me then, I could not do it.

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(*Mr. H. W. Cripps.*) I am much obliged to you. From my point of view, it may be an important thing that we should know that.

(*Mr. Pember.*) Quite so. Then I will take care that these papers you have asked for shall be furnished to you as soon as it is practicable.

(*Mr. H. W. Cripps.*) Thank you.

(*Mr. Pember.*) Now, sir, would you tell me how far you would like to go back?

(*Mr. H. W. Cripps.*) A very short way. I only want to collect from that how the capital stands, and how much of the whole capital is really important for the purposes of this inquiry.

(*Mr. Pember.*) I think I will venture to define what you mean.

(*Mr. H. W. Cripps.*) Of course, I take it for granted that the debenture shareholders and the preference shareholders are not much interested in the matter?

(*Mr. Pember.*) No. I think there can be not much difficulty in getting you the last three or four years' reports.

(*Mr. H. W. Cripps.*) I do not ask for so long back as that.

(*Mr. Pember.*) Would one answer your purpose?

(*Mr. H. W. Cripps.*) Yes, one year—the two prior half-years would quite answer my purpose.

(*Mr. Pember.*) By two prior half-years, would you mean, for instance, the accounts for 1897?

(*Mr. H. W. Cripps.*) Yes, for the two half-years that make up 1897.

(*Chairman.*) And I should think the half-year of 1898 had better be added.

(*Mr. Pember.*) Very well. That is what I will do: I will take care that you shall have those for the four companies I represent, and I have no doubt my learned friends will do the same for the others.

(*Mr. Pope.*) Yes.

(*Chairman.*) Do not Mr. Lass's tables embody this, to a great extent?

(*Mr. Pember.*) They do, to great extent, but, to tell you the truth, Mr. Lass's tables, which I was analysing the other day, as I tell you, enabled me to do it in the rough up to a certain point, but I found there was a point which I could not get very readily at all events on reading Mr. Lass's tables, and that is what I meant when I made my answer to your honourable colleague.

(*Mr. H. W. Cripps.*) Up to the present time, the evidence is full of engineering matters, so that we have really hardly got to that point.

(*Mr. Pember.*) Quite so; I quite appreciate it, I assure you, and I will take care that it shall be done. Two gentlemen have just said to me, sir, and I think, perhaps, I had better, therefore, repeat it, that although you shall have these papers from us, as a matter of fact the Local Government Board Report every year gives you the figures that you seem to want.

(*Mr. H. W. Cripps.*) I should like, in preference, to have the reports that you circulate to your own shareholders.

(*Mr. Pember.*) I have no doubt you would, sir. Of course, that is what the companies are more directly responsible for.

MR. CHARLES HAWKSLEY called and examined.

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20,640. (*Chairman.*) You are a civil engineer and a member of the Council of the Institution of Civil Engineers, I believe?—I am.

20,641. Have you had experience in the design and construction of waterworks?—I have—a not inconsiderable experience. I was for upwards of 25 years in partnership with my father who died in the year 1893, and I have since been carrying on my profession alone. I may mention that during that time and in the time previous, when I was in my father's office as an assistant, I have been concerned in the designing and execution of reservoir works for reservoirs containing a total of upwards of 20,000 million gallons in various parts of the country, and am now engaged in the construction of other storage reservoirs containing upwards of 4,000 million gallons.

20,642. Have you been concerned for local authorities as well as for water companies?—I have.

20,643. For which local authorities?—Amongst others, I may mention Huddersfield, Barnsley, Northampton, Leeds, Liverpool, Rochdale, and others, but those are the principal ones.

20,644. Have you been concerned for water companies also in the management or designing of their waterworks?—I have.

20,645. Which water companies, for instance?—Nottingham, Derby, Leicester—some of these places I am mentioning were originally water companies, although the works have now passed into the hands of the local authorities—Sunderland (where the works are still retained), Newcastle-upon-Tyne (they are still in the hands of the company), Bristol (the same), Southport, the Weardale and Shildon District, and Consett, and other companies.

20,646. You have had considerable experience both of private and of public management of water undertakings?—That is so.

20,647. I need hardly say your father had as much and more experience than almost any other man living, I suppose?—I believe he had. He had an experience extending over upwards of 60 years.

20,648. (*Mr. De Bock Porter.*) You seem conversant with both private and municipal management; can you tell us any of the drawbacks of municipal management?—Yes, I intended to treat that when we came to that portion of the subject, and possibly it would be more convenient to leave it till then, but if you wish it, I will enter upon it at once.

20,649. (*Chairman.*) I think we had better defer that. I do not know that I need go into what your father did; his reputation is so well known. We know that he with Sir Frederick Bramwell considered the Staines Storage Scheme?—Yes, he had given evidence before various Royal Commissions and Parliament on the subject of the London water supply, and therefore was very conversant with it, and he, as you say, reported to Messrs. Hunter and Fraser on the proposals they made for the Thames Storage Scheme.

20,650. We know that already?—That letter has already been read to your Lordship.

20,651. We need not go over that ground again?—After his death, Sir Frederick Bramwell and I were asked to consider the matter.

20,652. I think we have already had the figures of population which Lord Balfour's Commission took into consideration in the matter of water supply?—Perhaps you will allow me to explain that I propose dealing with the question as a whole and not in relation to any individual companies, and that I take it is the aspect of the case which the Commission over which your Lordship presides wish to consider. I have also in compliance with your Lordship's express desire adhered as closely as possible to the findings of Lord Balfour's Commission.

20,653. We know already what figures Lord Balfour's Commission based their calculations upon—namely, a population in Greater London of 5,656,909 people in 1891?—Yes, but there is a slight correction though.

20,654. First let me get that figure; that is the figure that they took for Greater London, is it not—5,656,909?—Yes, that is so.

20,655. And for the outlying parts of Water London, 76,041?—Yes.

20,656. Making a total of 5,732,950?—Yes, that is so.

20,657. On the other hand, they took the number of persons actually supplied by the eight companies in 1891 as being 5,237,062?—Yes.

20,658. That figure does not quite agree with the figures of the Water Examiner, I believe?—No. The difference is trifling, but perhaps it is desirable to bear it in mind; otherwise the figures would appear to be conflicting.

20,659. What was the figure of the Water Examiner?—5,232,155.

20,660. I do not know whether you can explain the difference; how does it arise?—I do not quite know

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how it arises. It is possible that it may have something to do with the Water Examiner taking the figures in the middle of the year and the Royal Commission basing them on those of the census which is taken in April—no, that could not be so, I see, because the Water Examiner's figures are lower. He, perhaps, had some means of correcting the figures which were laid before the Royal Commission. The alteration is insignificant.

20,661. Which figures have you taken?—I have taken the figure of the Royal Commission table.

20,662. Have you prepared a table showing the population from 1891 up to 1941?—Yes, increasing in Greater London at the rate of 18·2 per cent. per decennium, and in the outlying parts of Water London at the rate of 19·7 per cent. per decennium.

(The witness handed in Table 1. See Appendix N, 1.)

20,663. If we have already had these figures I really do not want to have them again?—Practically I think you have. The only difference between those and Mr. Middleton's is that Mr. Middleton took 18·2 throughout, and I have, to follow Lord Balfour's Commission precisely, taken the two figures of 18·2 and 19·7, but, as your Lordship will observe, it is of little value, because the whole population in the outlying parts of Water London in 1941 is only 187,500.

20,664. The net result of that table is that the population of Greater London grows from the figure you have given of 5,656,909 in 1891 to 13,043,712 in 1941?—That is so, but you have taken the figures from the water area; you ought to add the outlying parts. That is all shown in the total.

20,665. You have had seven years' experience since 1891—namely, from 1891 to 1898?—We have.

20,666. Have you got the actual figures showing what is the population of Greater London now?—Yes, I have the population from the Water Examiner's returns up to the end of 1897. In 1897 it was 5,703,404.

20,667. (Major-General Scott.) That is the population supplied, is it not?—Yes.

20,668. Not the actual population of Greater London?—Not the actual population; it is the population actually supplied.

20,669. (Chairman.) I want, if I can, to see whether the estimate of Lord Balfour's Commission has been made good by the actual experience of the last seven years. Can you give me the necessary figures to determine that?—I do not think I can. I do not think they are to be had. You might estimate it by assuming that there was the same relative proportion of population supplied in the one year as in the other, but there are no official returns that I have access to since the Census of 1891. I believe, as a matter of fact, judging from the number of people supplied by the water companies, that the population has not increased at the rate anticipated by Lord Balfour's Commission.

20,670. That would tend to show that the calculations of the Royal Commission are perfectly safe—that they are on the safe side?—Yes, although I ought to say that it is not quite right to judge from a short period like seven years, because population increases in waves, and you are sometimes descending into the trough and sometimes ascending with greater rapidity to the crest of the wave.

20,671. We can only take what one has got, you know. But I see your table has stopped at 1941; is that on the ground of taking 40 years from the next census?—Yes, 40 years being the time which Lord Balfour's Commission decided it was sufficient to look ahead, and which, I think, your Lordship has adopted.

20,672. Have you also in considering future requirements taken 35 gallons per head as a safe basis?—I have, on the finding of Lord Balfour's Commission, although I consider that to be perhaps an excessive amount, for reasons which I will state more in detail when we reach that part of the subject.

20,673. Now have you prepared a table of the average daily supply, population supplied, and increases each year in supply and population from 1881 to 1897?—Yes, that is based on the Water Examiner's returns, and has been prepared in a form probably convenient to the Commission. There has been added to it the increases in each year.

(The Witness handed in Table 2. See Appendix N, 2.)

20,674. (Major-General Scott.) Do you not think that it would be as well to bear in mind that the data for obtaining the population is really so imperfect that a few thousands more or less in each figure cannot be regarded as of any importance whatever?—I do not so regard them.

20,675. I mean when you put down a figure like 7 or 8 or 1 at the end of these long rows of figures, it really means nothing at all?—For my own part I should only take them in thousands, but inasmuch as they are given in the return to a single unit, one is obliged in carrying them out to introduce units, or else I should decard all those or take them only as so many round thousands.

20,676. (Chairman.) Let me understand this table; the increases in population in this table are the increases in the population actually supplied with water?—That is so. You will observe that there is no such violent fluctuation as would render it at all difficult to provide for it in anticipation of the growing requirements of the inhabitants.

20,677. Between one year and another there is a considerable difference in the increase of the population. For instance, in the year 1883 the increase is 133,828, whereas in the year 1891 the increase is only 49,030?—That is so, but you will observe that it is almost a regularly steady decremental rate of increase until you come to that period; then it begins to rise again. I think that it was then at the bottom of the trough of the wave, which I was referring to just now; and that we are now on the rise.

20,678. Supposing you applied the rates of increase that Lord Balfour's Commission anticipated, namely 18·2 and 19·7, to this number of persons supplied, would the results be larger or smaller than what you have got on the table?—They would be smaller.

20,679. Smaller?—No, I beg your pardon; I am putting it the wrong way to you. The results of that application would be to give a larger population supplied—

20,680. Than is actually supplied?—Than actually exists.

20,681. Then so far as we can get the facts, subject to all the corrections that you and General Scott have suggested, these figures show that Lord Balfour's estimate was on the safe side?—Certainly. I think it was a perfectly safe one. In Lord Balfour's Report, as your Lordship is no doubt fully aware, the reason is given why those figures were taken.

20,682. I only just want the fact. Your table gives as the average daily supply in 1897 the figure that I think we have had before, of 202,102,544 gallons?—Yes.

20,683. (Mr. De Bock Porter.) Can you account for the large discrepancy between the increase of the years 1892 and 1893, namely, 4,273,256 and 10,346,491?—1893 was a very dry year, and then you will observe that in the next year, 1894, it fell back again.

20,684. (Chairman.) Then in 1895 there was an immense increase?—That was due to the waste caused by the severe frost in the early part of that year. Then there was a great falling back again in 1896.

20,685. Will you separate that total supply of which I have just mentioned the figure into its sources—how much from the River Thames?—From the River Thames 112,178,641 gallons.

20,686. From the Lea?—55,292,863 gallons; then from springs and wells 34,488,016 gallons, and from ponds at Hampstead and Highgate, used for non-domestic purposes, 143,024 gallons.

20,687. That makes up the total of 202,102,544 gallons that you have given in your table. Now will you hand in your table of future requirements?—Yes.

(The Witness handed in Table 3. See Appendix N, 3.)

(Mr. Pember.) That includes certain other supplying bodies besides water companies, you notice, my Lord.

(Mr. Pope.) It is the total supply, I think, by whoever supplied.

(Mr. Pember.) It includes all the supply such as by public local authorities.

(Chairman.) Have you included in this the supply by all the outside companies; if so, I do not know what use this table is to us.

(Mr. Pope.) I do not either.

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(Mr. Pember.) It shows what water we want.

(Witness.) This is the daily quantity wanted for that entire population.

(Mr. Pember.) It must be provided somehow.

(Witness.) I think it is pointed out, that even if it were not supplied by the eight London companies, the other companies or authorities responsible for supplying a portion of that population, would have to derive their water from these basins; therefore, it is all included.

(Mr. Pember.) Somebody must do it if the eight companies do not; that is what he means really.

(Witness.) Yes.

(Mr. Pope.) Somebody has to provide all this water. It is a mysterious table for a simple purpose. Thirty-five gallons per head has to be provided for a population by somebody if you are to have 35 gallons per head for that population at all. It is only a question of arithmetic.

20,688. (Chairman.) You start in 1891 with an estimated population of 5,733,000?—Yes.

20,689. That, by what you have already told us, includes the population of Greater London, and of the outlying parts of Water London?—That is so.

20,690. Does that cover more than the districts of the eight water companies?—No; but I think within those districts there are some authorities supplying certain parts—little islands, as it were.

20,691. Such as Croydon?—Yes, and Tottenham.

20,692. (Major-General Scott.) Is it not the fact that in Greater London there are certain areas outside the water districts of the metropolitan companies?—Yes, there are.

20,693. Those are supplied by independent companies or local authorities, are they not?—Yes.

20,694. (Mr. H. W. Cripps.) I do not quite understand your first figure of 200 million gallons in 1891, which is smaller than the actual supply of the last year?—You see we have already advanced seven years. There are seven years increase of population to be supplied, we are now approaching 1901.

20,695. (Chairman.) In 1891, you required 200,655,000 gallons?—Yes, that is the quantity that would have been required had the supply in that year been at the rate of 35 gallons per head per diem.

20,696. Can you give us what the actual supply was over the whole area that your table deals with—

(Mr. Pember.) If you go back to the previous figures, you will find it, my Lord.

20,697. (Chairman.) You have got a surplus in your estimate of 25 million gallons?—Yes.

20,698. Then I do not quite see the use of the table?—Because it is based on the estimated requirements.

20,699. I know, but what is the value of that if it is so far distant from the fact?—The object of introducing the year 1891 was to give a starting point which was familiar. The real object of the table is to give the estimated population and the estimated quantity of water required in each tenth year—1901 to 1941, but it is generally convenient to have as a base a year which has already passed, and that is why 1891 was introduced.

20,700. Inasmuch as the figures for a year already passed are wrong, what confidence can we put upon the figures for the years which are not passed but which are to come?—Those are necessarily an estimate, and it is an estimate made by Lord Balfour's Commission, assuming a certain rate of growth of the population and assuming a certain rate of consumption of water per head.

(Mr. Pember.) It is simpler than all that, as a matter of fact the consumption in 1891 was not 35 gallons per head.

(Sir George Bruce.) That is what it is.

(Mr. Pember.) I have just done it while he was speaking, it was only 33 gallons per day, and I believe it is still even taken on a smaller population than he is speaking of here.

(Witness.) I am afraid I am taking that to be already known.

(Mr. Pember.) You must not take anything as known.

(Witness.) I ought not, perhaps.

(Chairman.) I am trying if I can to grasp the object of these tables, and what is the real use of them.

(Sir George Bruce.) It is a simple rule of three.

(Witness.) I want to give your Lordship as much assistance as I can. The real object of these tables is to enable you to see at a glance what quantity of water will be required for the supply of the water companies' areas in any of the census years up to the year 1941.

20,701. Upon what principle have you estimated the increase of the population in those decennial periods?—I have taken the increase as laid down by Lord Balfour's Commission.

20,702. What 18·2?—18·2 and for that small portion 19·7.

20,703. You have taken both the ratios, have you?—Yes, that is merely taken so that no question should be raised. It makes no practical difference whether you take it as 18·2 or introduce the other figure.

20,704. Which have you done?—I have used both. May I point out that the figures of estimated population in that table of future requirements are identical with the figures of estimated population in Table 1, and are only reproduced here to save the trouble of reference.

20,705. (Major-General Scott.) We are confined in our reference to the question of the responsibilities in various ways of the eight Metropolitan water companies; now, this introduces the question of the future water supply of the whole area considered by Lord Balfour's Commission, which includes the area for which the companies are not responsible at all?—That is so; but I think Lord Balfour's Commission intimated that, inasmuch as the water for those other districts would have to be obtained from the same sources as the water supplied by the water companies, they ought to be taken into consideration when determining the effect on the river Thames or the Lea?

20,706. Yes; but, then, that followed from the particular reference to the Commission, which directed them to consider what supplies were available on the whole within the watersheds of the Thames and the Lea; but, in the question we are dealing with, I think we are rather confined to the subject of the future of the water companies alone?—In treating it in this way, so as to follow what we took to be the wish or the dictum of Lord Balfour's Commission, we have taken it against the water companies, because we have assumed that they will have to provide, perhaps, storage for more water than they really will have to do.

(Mr. Pember.) Is it a real difficulty, sir, may I venture to suggest? Does it not rather show that there is a larger margin inside the capabilities of the Thames and the Lea? If that were so, would it not show that there was a larger margin of safety?

(Major-General Scott.) Yes; but in considering what the future of the companies is to be financially, and so on, the only area involved is, strictly, the area of their own districts?

(Mr. Pember.) Quite so; and it makes it a little easier for the companies if you take that point into consideration.

(Witness.) That is so. I think the numbers are not very large, if I recollect rightly—something like half a million?

(Mr. Pope.) It is somewhere about half a million—it is 5,232,000, as compared with 5,733,000 in the two tables of districts supplied and the population table.

(Major-General Scott.) That is the present difference, is it not?

(Mr. Pope.) It is what appears on this table. The table of future requirements, which Mr. Hawksley has been illustrating, assumes the population in 1891 to have been 5,733,000 as requiring supply; and in his Table 2 the population actually supplied is shown to have been, in 1891, 5,232,155.

(Mr. Pember.) That is the figure found by the Commission.

(Chairman.) No, that is the Water Examiner's figure.

(Mr. Pope.) Yes, it is the Water Examiner's figure.

(Witness.) If we had dealt with it on the other basis, I think, which is now suggested by General Scott, this question might have been raised: "Oh, it is all very well to show us the effect on the Thames of what the water companies are going to take; but these

"other districts must also be supplied, and they must also resort to the Thames or these same sources of supply, and therefore you are not placing before us the full facts of the case."

(*Major-General Scott.*) Yes, that is all very well, *quod* water supply, but when it comes to finance, the question of the cost to the companies of their fulfilling their future obligations, this includes an area over which their operations will not extend at all.

(*Mr. Pember to Witness.*) So it would make it rather easier for the companies if you take General Scott's point.

(*Witness.*) Yes, that expresses it exactly.

20,707. (*Major-General Scott.*) If we had any means of knowing progressively what that population is likely to be which lies outside the companies' districts, we might work with that, as it were, if any question arose in considering the matter, so as to reduce the companies' financial burdens to what they actually will be?—Yes. When we come to the cost of providing storage for the Thames water, the effect would be to diminish the cost which by this method is placed upon the companies. We did not consider it worth while, really, introducing a complication of that kind; but if it is desired that that information should be supplied, I should be very happy to do my best to afford it.

(*Mr. Pember.*) I think I can do it for you in a very few minutes, if I may venture to address your honourable colleague, my Lord. I think I can get out from the Report of the Water Commission of 1893 what was the population—not the population supplied, but the population in the eight companies' districts—and then, if we compare that with the 5,733,000 which he takes now for the population of 1891, we shall be able to deduct that amount of responsibility which is represented by the population not in their districts.

(*Major-General Scott.*) Yes.

(*Mr. H. W. Cripps.*) That is so.

(*Chairman.*) On the other hand, one must remember also, for instance, taking the New River Company, that it has got a large district in Hertfordshire with a population which is not supplied at all.

(*Mr. Pember.*) Yes, that, of course, is another element, and a very important one.

20,708. (*Chairman.*) And, for all I know, never will be supplied by that company. (*To the witness.*) To meet this daily quantity of water required, we know that Lord Balfour's Commission relied upon 52½ million gallons a day from the Lea?—Yes.

20,709. 40 million gallons a day from wells in the Lea Valley?—Yes.

20,710. And 27½ million gallons a day from wells in the Kent Companies' district?—That is so.

20,711. Making a total of 120 million gallons a day?—Yes.

20,712. Leaving, therefore, to come from the Thames—and, I suppose, one ought to say, from wells in the Thames Valley?—Yes.

20,713. The difference between 120 million gallons and the total quantity from time to time required?—Yes, that is so.

20,714. That total quantity required will, on your table, rise in 1941 to 343 million gallons odd?—Yes.

20,715. And, of course, minor quantities in the intermediate years?—Yes.

20,716. I will first take your general opinion; are you of opinion that the Thames alone will suffice to furnish that additional supply, rising by degrees up to 343 million gallons a day?—Most decidedly. I have given a great deal of attention to the subject, and am convinced that it will supply not only that, but a considerably increased quantity beyond that.

20,717. We know that there is a considerable drainage area of the Thames above Teddington Weir?—Yes, 3,766 square miles.

20,718. What does that make in acres?—2,400,240 acres.

20,719. With a population of—?—1,200,000 persons, which is equivalent to 320 persons per square mile.

20,720. And are there sites for storage conveniently accessible?—Very convenient sites, and sites that can be utilised with as much facility as the sites now being utilised for the Staines Reservoirs.

20,721. (*Mr. H. W. Cripps.*) Do you mean other places than Staines?—In the neighbourhood; I have inspected those places, and there is a large—

20,722. Still, your calculation is confined to the neighbourhood of Staines, is it?—It is, because there exists in the neighbourhood of Staines—

20,723. You do not mean to suggest that there may not be many other places up far above Staines?—No.

20,724. Which, in the case of a difficulty, might be made into reservoirs?—There are, no doubt, plenty of sites, but it was not necessary to go further afield, while the sites in the neighbourhood of Staines were available.

20,725. (*Mr. De Bock Porter.*) Then you do not appear to agree at all with Mr. Hunter in saying that there may come a time when it may be necessary to go for another source of supply; you think it is idle to look to any other source than the Thames?—Within the period which we need look forward to now. If you were to ask me what might happen 500 years hence, one could not say. When we have used up all the available water of the Thames, then it will become necessary, of course, to go elsewhere.

20,726. But you would say for the next 100 years, at any rate, it is not necessary to go to Wales?—I do not think so.

20,727. Not even to secure a claim to any Welsh water, without going to the expense of works to bring it?—If Parliament would allow water to be secured in advance in that way, I do not know that there is any reason, except the money that would be lying idle all the time, against buying a plot of ground in advance, the same as a man, although he does not wish to build a house at present, and may not wish to build it for 20 years, sometimes secures a site.

20,728. (*Mr. De Bock Porter.*) You would think it an unnecessary precaution at the present time?—I think so.

20,729. (*Chairman.*) I suppose you would wait, at any rate, until somebody else brought in a Bill to appropriate, say, the Yrfon?—Yes, or until there was, at all events, a talk of appropriation for other places.

20,730. (*Major-General Scott.*) Can you say what would be the water area in the Thames Valley of all these reservoirs when they are completed—the collective water area in 1941, say?—I can get it for you, but I have not got it.

20,731. You have not considered it yourself?—No, I have not considered it. It did not appeal to me as requiring consideration. I have a plan of all the reservoirs laid out, from which the water area can be obtained; in fact, I think it has been got out, but I forget what it is.

20,732. It is a very large physical fact that as regards the features of the valleys, is it not?—Certainly; you would have a large expanse of water, where now there is no water, except, perhaps, in times of great flood.

20,733. (*Mr. De Bock Porter.*) You contemplate appropriating about 6,000 acres, do you not, ultimately?—I have not the figures, but Mr. Hunter is kind enough to say he will supply them in a few minutes. I have not had occasion to consider the acreage; it did not enter into one's calculations, and, therefore, I have not it at hand—it shall be furnished to you.

20,734. (*Mr. Pember.*) I think there were 11 reservoirs, were there not, of 3,600 acres?—No, of 3,600 million gallons content. I am told it comes roughly to about 6,000 acres.

20,735. (*Major-General Scott.*) Ten square miles, nearly?—Yes.

20,736. (*Chairman.*) Ten square miles of water in the neighbourhood of Staines?—Yes.

(*Sir George Bruce.*) I suppose there is a great deal more than that under water in a flood.

20,737. (*Mr. Pember.*) It is nothing to a flood, I take it?—But it would not do the damage that a flood does; it would not go into people's houses.

20,738. (*Chairman.*) Have you worked out in a table the quantity that will have to be taken from the Thames for these varying populations from 1901 up to 1941?—I have.

20,739. You may as well put that in, although it is all arithmetic?—Very good, my Lord.

(*The Witness handed in Table 4. See Appendix N, 4.*)

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20,740. I see for 1901 you only deduct 106 million gallons as obtainable from the Lea Valley and the Kent Company's district?—That is so, for the reason that the full quantity estimated by Lord Balfour's Commission to be obtained from that source would not, by that period, have been reached.

20,741. If I have understood your evidence so far, you do not regard even the 343 million gallons a day to be obtained from the Thames in 1941 as the limit to which the Thames could reach if necessary?—I do not.

20,742. You think more could be taken?—I think more might be taken with propriety.

20,743. Have you fixed at all in your own mind what is the limit at which you would stop—where you would say it would become improper to take more?—No; I can give you the data on which I should fix it, if it were necessary to do so. It would depend on the quantity which is allowed to flow over Teddington Weir, and on the limit which would be placed to an extension of the storage system by financial considerations.

20,744. Let us take those in order. What do you think is the proper limit of the quantity flowing over Teddington Weir?—I think that that limit might very properly be reduced to 100 million gallons a day, with an even smaller quantity in exceptional years, as proposed by Sir Frederick Bramwell. In dealing with the subject, however, I have adhered to the 200 million gallons a day, because I understood that, in an earlier part of this inquiry, it was your Lordship's wish that that figure should be adhered to as far as possible.

20,745. I think the only wish we have expressed is, that the conclusions of Lord Balfour's Commission should not be combatted or fought out before us?—That was not a conclusion of Lord Balfour's Commission.

20,746. No. I do not think it was; that was the figure adopted before them on the suggestion of the Thames Conservancy?—It was.

20,747. We may hear the Thames Conservancy on the point; but you are of opinion that 100 million gallons a day is enough?—I think it is. I think that the present year has shown that to be the case, when a much smaller quantity really flowed over Teddington Weir, and we have not heard that anybody was injured in consequence.

20,748. Can you give us an idea, in ordinary language, of what sort of river you would have below Teddington Weir at ebb tide if only 100 million gallons came over—what sort of size stream would it be?—It would be rather a difficult question to answer—first of all, because you have to take into consideration the effect of the Richmond Lock and the Richmond Weir.

20,749. Below the lowest lock, what sort of river would you have, with only 100 million gallons a day coming over the lowest weir?—I am afraid I could not illustrate it to your Lordship. One would really require a section of the river and cross-sections of it, to be able to give you an answer which would be of any service. May I add one thing before leaving it—of course, the river you speak of would only be seen at low water.

(Chairman.) That is what I have said.

20,750. (Sir George Bruce.) The quantity of water required from the Thames in 1941, as shown in your last table, is based upon 200 million gallons going over Teddington Weir, is it not?—It is.

20,751. As a minimum?—It is.

20,752. Except on exceptional occasions?—Except on those rare occasions on which Nature does not send down that quantity.

20,753. What I mean is this, that although you think 100 million gallons is sufficient, this calculation is based upon 200 million gallons?—That is so; and so are all the calculations which I am about to lay before you.

20,754. (Chairman.) Forgive me; I think the table which Sir George is drawing your attention to is quite independent of any flow over Teddington Weir. It is the quantity that has to be taken from the Thames?—Yes, it is so.

20,755. That does not involve any assumption as to the quantity going over Teddington Weir?—Yes, it is in the subsequent tables.

20,756. (Sir George Bruce.) All these tables are based upon the assumption of 200 million gallons going over?—Yes; but as his Lordship pointed out that particular table does not involve the consideration of any quantity.

(Sir George Bruce.) That is only as to that individual table.

20,757. (Chairman.) You have, of course, read the evidence that Mr. Hunter and Mr. Middleton have given us with regard to the extension of the Staines Reservoirs Scheme so as to enable 400 million gallons a day to be taken from the Thames?—Yes.

20,758. Do you concur in that evidence?—I do.

20,759. This year of drought has largely increased the estimates of the necessary storage in order to get those daily average quantities from the Thames, has it not?—It has; and in consequence we have had to recalculate the voluminous tables on which the storage is based.

20,760. In your tables, which we shall come to in a moment, what have you estimated as to drought. Have you estimated that the conditions of 1898 will recur?—I have, so that there should be no doubt whatever as to the sufficiency of, not only the river, but of the storage proposed to be provided to meet such a state of things, which, however, I need hardly say is in itself an absurdity.

20,761. I mean have you assumed in your tables that the drought of 1898 will recur annually?—I have, that is to say, that if it did recur annually, the storage provided would meet such a state of things.

20,762. Now you have got a great number of tables?—I hope not too many. I have tried to cut the number down as much as possible.

20,763. Yes, but we have had other people who have put in tables. Are your tables the same as Mr. Middleton's, or are they different?—They differ in some respects.

20,764. Then there is nothing for it but to put them in?—Perhaps if I were to hand in to your Lordship a diagram showing the natural flow of the river in 1893 and 1898 it might be of interest to your Lordship. (The diagram was handed in.) The part coloured buff is the flow in 1893; the part which is hatched is the flow in 1898. Your Lordship will observe the effect of the late drought in 1898.

20,765. (Major-General Scott.) The brown is 1893, is it not?—The brown is 1893, and the dark is 1898. It stops at the end of October, because at the time this was prepared we had not the further information necessary to carry it on another month. But I may mention that now we have had the returns for the month of November, and the result is almost identical with the working of 1893.

(Mr. De Bock Porter.) What is the grey?

(Chairman.) That is 1898.

(Witness.) If we took the actual figures of 1898, at the termination of the drought, we should have 200 million gallons more in the reservoirs than we have on the figures of 1893—such a small quantity that it could be disregarded.

20,766. (Sir George Bruce.) What is the difference between that sort of dull black and this brown?—It is merely due to the fact of the hatching overlying the brown colour there, and overlying the white here. (Pointing on the diagram.) You will see the hatched portion goes right down to the base line.

20,767. It is all one?—It is all one.

20,768. (Chairman.) Where is 1893?—1893 follows that line. The dark is 1898. (The witness further explained the diagram.) I have another diagram showing the working of the storage reservoirs in the year 1921, and again in the year 1941. The intermediate years would be something between the two. (Handing in another diagram.)

20,769. (Sir George Bruce.) This shows the number of gallons?—The number of gallons capacity. That is the flow of the Thames. (Explaining the diagram.)

20,770. (Chairman.) Now you have prepared a table showing the reservoir capacity required in the Thames Valley in the years 1921, 1931, and 1941, based on the conditions of the year 1898 for 10 months, and on the conditions of the year 1893 for the last two months of the year?—That is so.

See 21,998.

See 21

See :

20,771. Do you put that in P—I do.

(Witness handed in Table 5. See Appendix N, 5.)

20,772. (Sir George Bruce.) You take the last two months of 1893, because you have not got the last two of 1898?—At the time this was prepared we had not the last two months of 1898.

20,773. (Mr. Balfour Browne.) This table gives in figures what the diagram gives in colours; is not that so?—Yes.

(Mr. Balfour Browne.) There is not a line for 1931. That is the only difference, I think, my Lord.

20,774. (Chairman.) I see in your calculation of storage you allow 10 per cent. only for evaporation and bottom water?—Yes.

20,775. In your judgment is that sufficient?—I think it is.

20,776. Have you actual experience upon the fact? You say that you have constructed a number of storage reservoirs, and do you find that to allow 10 per cent. beyond the net storage required is sufficient to allow for evaporation and bottom water?—I think that that is quite sufficient. I do not know that I could refer you to reservoirs of this particular type, but in my opinion that is quite sufficient.

20,777. (Mr. De Bock Porter.) Is there no customary allowance for this purpose?—No, we usually do not make any allowance, as a matter of fact. You see there is the rainfall on the surface of the reservoirs which counteracts, to a great extent, the evaporation, and then, as for the bottom water, it is only very occasionally that we should resort to the bottom water of a reservoir. Usually the reservoirs made by dams across valleys contain a very small quantity in the bottom. There is a slight wedge shape or pyramidal shape of water in them left at the bottom.

20,778. (Chairman.) The more pyramidal the shape the higher will the deposit mount, I should have thought?—The deposit in the reservoirs of that kind extends over the entire bottom of the reservoir and mounts up the sides, and places them rather in a worse condition than reservoirs of this kind which have a very large area of practically flat bottom, because the mud deposited on the side is more apt to be disturbed by waves.

20,779. You cannot then furnish us with any experience of your own justifying this estimate of 10 per cent. for evaporation and bottom water?—No, not in the way your Lordship puts it, but my own opinion is that it is ample for that purpose.

20,780. But what is that opinion based upon, because if you have had experience and cannot derive from your own experience anything to justify the opinion, what is it worth?—One's knowledge that the deposit in these reservoirs is really very small in depth for a great number of years as has been stated—

20,781. But that must depend on the sort of water you bring into your reservoirs, must it not?—Yes.

20,782. If you bring into the reservoir water highly loaded with sediment, the deposit will be greater?—Yes, but take the case of water like the Thames water, the amount of deposit has been explained to you previously by Mr. Hunter as deduced from the actual experience of the London companies, and it is really very small.

20,783. (Mr. Pember.) You go on the amount of solids per gallon, I assume?—Yes.

(Mr. Pember.) We know them.

20,784. (Major-General Scott.) There is a difference in the features of the two kinds of reservoirs you refer to, the one across a valley and the other of the Staines type. In the reservoir across a valley, of course, the drainage sweeps everything that can be collected by rain water into the reservoir, does it not?—That is so.

20,785. And you resign yourself practically to the idea, that some day in the distant future the reservoir will be filled up altogether?—Yes, I suppose that these reservoirs, unless they are artificially emptied, will have the same fate as many lakes in the past—they will gradually fill up, but it would be taking thousands of years into account.

20,786. We do not know how long it will take?—No.

20,787. In the case of the Staines reservoirs the pumping is always at a certain height above the bottom of the river where it is derived from?—Yes.

20,788. The pumping would be drawn, not from the bottom or near the bottom of the river, but some distance above the bottom?—Yes, I think it would be because the river is ponded up by a lock.

20,789. It would not get the worst and most heavily laden water for pumping purposes?—It would not get the detritus washed into it. Besides which, I think a great deal of that is deposited on the way down.

20,790. Do you contemplate ever cleaning out these enormous reservoirs at Staines?—I think they would probably be cleaned out as occasion offered. When there happened to be a period like the present year of great drought, and the reservoirs were drawn down, an opportunity might be taken to clean them out if we found it necessary to do so.

20,791. (Mr. De Bock Porter.) Would not the evaporation be very large over an area of 6,000 acres of shallow reservoir?—These reservoirs are not very shallow. They are about 30 to 35 feet in depth.

20,792. But the evaporation would be very much larger than over a lake like Thirlmere, for instance?—No; the evaporation from the surface of the water would be precisely the same, only it would bear a greater relation to the contents of the reservoir.

20,793. These reservoirs are much deeper, are they not, than your Staines reservoirs—these reservoirs like Yrwnwy and Thirlmere?—Yes, at one end. At the other end they are shallower; but, on the whole, the depth is greater in the case of the impounding reservoirs which you speak of than it is in the case of the Staines reservoirs in relation to area.

20,794. Then, the evaporation would be larger, would it not?—In relation to the capacity—to the quantity of water impounded.

20,795. (Major-General Scott.) What depth do you allow for evaporation, on the average, in the year?—That is a very difficult question to answer. It varies a good deal with the nature of the season.

20,796. Yes, but, on the average, do you make any particular allowance in depth?—In the case of an impounding scheme we allow from 14 to 16 inches; but from the surface of a water area it would be more than that.

20,797. I do not quite follow that?—From the surface of the ground on which the water falls there would be a loss of from 14 to 16 inches, according to circumstances.

20,798. (Mr. Pember.) That includes percolation?—Yes, it is total loss.

(Chairman.) That is not evaporation.

20,799. (Major-General Scott.) I mean, assuming there is always some water in the reservoirs, what would be the evaporation in depth in excess of the depth of the rainfall? Would there be waste from evaporation, on the whole?—On the whole, I think there would be no waste.

20,800. You think not?—No. The rainfall would quite make up for the evaporation, on the whole.

20,801. You think so?—Yes, more than that.

20,802. (Chairman.) What is going to be the depth of the Staines reservoirs?—About 35 feet.

20,803. Of course, as compared with the depth of Thirlmere, that is an extremely insignificant depth?—I do not recollect what the depth of Thirlmere is, but I suppose, in the deepest parts of the lake, it is probably 80 feet.

20,804. Not more?—I daresay not. I do not know it as a fact. I have not the figure before me.

20,805. The object of my question is this: Is it not the fact that evaporation in a shallow sheet of water will be more rapid than in a deep sheet of water?—Not from an acre of surface; it would be the same.

20,806. If the sheet of water is shallow enough for the heat of the atmosphere to warm the whole sheet right through, will not there be more evaporation than if that sheet is of great thickness?—That might be so if you had a sheet of water 6 inches in depth, but that would not be so in any depth such as we have to deal with in practice.

20,807. (Mr. Pember.) Would the sun's rays work that difference on water at a depth of 35 feet?—No, nor at a much less depth—not to cause evaporation.

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(Mr. Pember.) The evaporation, my Lord, if I may say so, is from the top film of the water, not from the bottom.

(Chairman.) Quite so. The only question is at what point you reach the depth at which the bottom is not reached also.

(Mr. Pember.) Yes, quite so.

(Witness.) It would have to be very very shallow indeed.

(Chairman.) It is quite clear that water in a saucer will evaporate quicker than water in a deep well.

(Mr. Pember.) In a cup?

(Chairman.) A cup is hardly enough. I should not think there is much difference between a cup and a saucer.

(Witness.) Even some of these large impounding reservoirs have a depth of not more than 35 to 40 feet, where the country is flat.

20,808. (Chairman.) To come back, for a moment, to your Table 5. I see you bring out, as the total storage to be provided in 1941, 40,976 million gallons?—Yes.

20,809. I think that is a different figure from any we have had yet, is it not?—It is somewhat in excess of the figures put before you by Mr. Middleton, and it arises from this fact: that Mr. Middleton took the drought to have ended in October. I, coming later, have had the advantage of knowing that the drought did not end in October, and I have continued it into November, and that requires some additional storage, which is included here.

20,810. (Mr. De Bock Porter.) Would not there be some difficulty in the future, when you have such large reservoirs as those including these 40,000 million gallons, in getting them filled?—No; it is merely a question of the amount of engine power. If you will kindly refer to the second diagram, you will see that by the end of the year the reservoir has become re-filled to exactly the same point at which we have taken it to be at the beginning of the year.

20,811. (Chairman.) That diagram illustrates the figures of the table you have just put in?—Yes.

20,812. It is a diagram to show the quantity of water in store during the years 1921 and 1941?—Yes, and, of course, for any time between those two limits that I have given, a similar line would be followed somewhere between the two.

20,813. Have you assumed in this diagram that there are always 200 million gallons a day going over Teddington Weir?—I have, except on those few days, I think about 9 or 10 in number in the year, when the natural flow was less.

20,814. (Mr. De Bock Porter.) When the natural flow is less, plus the quantity that the companies are now taking?—No, assuming that the companies did not take any at all.

20,815. Any at all?—The term "natural flow" means the quantity of water flowing down the river, on the assumption that none is taken out by the companies.

20,816. (Chairman.) How soon after floods do you begin to pump in this diagram to get those quantities in store?—At once. I do not think there is any necessity to abstain from pumping.

20,817. Then you discard the 15 days, or even the six days' limit that the other engineers have accepted?—Yes, unless the engineers thought it was advisable not to take water in for the purpose of saving their filter beds.

20,818. Yes; but, as I understand, in order to get the quantity shown on your diagram, you must pump immediately after a flood; otherwise you would not get the quantity you want?—No, we need not pump immediately after, because the storage required to meet droughts is so very large in excess of any storage required to meet stoppage during floods that we might stop so many days without pumping without requiring any more storage. You will observe that the reservoir is full for nearly four months at the top of the diagram.

20,819. Yes?—That is even in 1941. I may here explain this. Perhaps you may observe that notwithstanding that at the commencement of the year the flow of the Thames was very considerable, the reservoir did not fill up so rapidly as it might have been assumed to fill up, and not so rapidly as we might assume it to

fill from the flow of the water at the end of the year; but, really, the reservoir would fill more rapidly had we not assumed that the year 1898 was recurrent; and we have taken it year after year, and assumed that every year is as bad as 1898.

20,820. But what I want to know is, have you filled your reservoirs to the amount shown upon this diagram only on the supposition that you pump all the water down to 200 million gallons?—No, we have a limit of pumping, we can only pump that which our pumping machinery will enable us to pump, and that is far less than the flow of the Thames, as you will see by the other diagram.

20,821. Are you going back to the first diagram you put in?—Yes. You will see there are enormous quantities flowing down the river which the companies are unable to touch or to deal with in any way or shape—enormous floods.

20,822. (Major-General Scott.) What will be your collective pumping power at the maximum when the reservoirs are all finished?—In 1941 it is 638 millions in 24 hours.

20,823. (Chairman.) You pump into your reservoirs that quantity of water?—Yes, we pump it if it is there to pump, but we cannot pump more, however much there is.

20,824. (Mr. Pope.) At what date is that—1941?—Yes.

20,825. (Major-General Scott.) What horse-power would that be in foot-pounds?—I do not think I can give you that immediately. I have not had occasion to take it out in horse-power. I can get it for you if you wish.

20,826. (Chairman.) Your second diagram shows that in 1941 you will have to increase the contents of your reservoirs from 16,000 million gallons up to 41,000 million gallons?—I think it is from nearly 20,000 million gallons in 1921.

20,827. I was taking 1941, if you will kindly take that?—But the increase you put at 16,000 million gallons.

20,828. Your marginal note is that the contents of the reservoir at the beginning of January is 16,000 million gallons?—Yes, but that was not the reservoir capacity. That was the quantity of water that was in the reservoir at that time.

20,829. Exactly—that is exactly what I said, if you would do me the honour to follow me?—I beg your pardon.

20,830. In the beginning of January you have got 16,000 million gallons in your reservoirs?—Yes.

20,831. In the middle of February you have got 41,000 million gallons in your reservoirs?—Yes.

20,832. Therefore, in that month, you have pumped 24,000 million gallons from the river into your reservoirs?—Yes, that is so. I beg your pardon. I had not apprehended your question properly.

20,833. That means taking flood water from the very beginning, does it not?—Yes.

(Mr. Pember.) But not the whole, because he only takes 638,000.

(Chairman.) Not the whole of it.

20,834. (Mr. De Bock Porter.) But it would not be possible to fill it in that time, if you had regard to the number of days that you had to wait before taking the flood water?—All that would happen would be that it would become filled a few days later if we had only that amount of engine power; but, if we increased the amount of engine power, we could pump up that quantity in a shorter period.

20,835. (Chairman.) And wait the six days after the flood?—And wait the six days; but there would be no necessity to increase the amount of engine power, because, as you will observe, it is only putting back this line for those six days, and it would be six days later before we had the reservoir full, and as the reservoir is practically full for about four months, that would not be of the slightest consequence.

20,836. (Mr. De Bock Porter.) There would be not the slightest doubt about being able to fill it long before it was wanted?—Not the least.

20,837. (Chairman.) In fact, you do not begin to want the water out of your reservoir till the middle of June, according to your diagram?—That is so.

20,838. (*Mr. Pember.*) Do not those figures—638 million gallons—which you said, I think, was the extent of the pumping power?—Yes, per diem.

20,839. Does not that show there is a very large margin between that and the Thames in flood?—Yes.

20,840. An enormous margin?—Yes, enormous.

(*Chairman.*) The Thames in flood goes up to 3,200 million gallons.

(*Mr. Pember.*) Quite so.

20,841. (*Major-General Scott.*) Sir Edward Frankland has always laid considerable stress, has he not, upon the necessity of avoiding floods in the river in taking the water for use?—I think you will have evidence laid before you by most eminent chemists, including Sir Edward Frankland, that that is not a necessity.

20,842. You do not propose to give any evidence yourself on that subject?—No, I would much rather leave the chemical question to those who are more competent to deal with it. You are going to have called before you, I think, some of the most eminent chemists of the day, who will speak on this subject with much greater authority than I can pretend to do.

20,843. (*Chairman.*) Now, I see you have prepared very elaborate tables about the cost of this Thames Reservoir Scheme. Table 6 is a table of the cost, and here, again, would you allow me to ask you, just for my own information, is this a different estimate from that of Mr. Middleton, or is it the same?—It differs somewhat; I take, for instance, rather a larger storage, for the reason that I have already explained.

20,844. Is that the explanation of the difference?—I think you will find that otherwise the difference is not very great, except that I have stated it in a different way. (*Witness handed in Table 6. See Appendix N, 6.*)

20,845. (*Mr. De Bock Porter.*) The figures of the cost are based upon your actual contracts at the present time, are they not?—Yes, they are.

20,846. Has there been very much difference in the cost of the construction of reservoirs, say, in the last 20 years?—Yes; it has risen very considerably during that time.

20,847. Do you assume it is likely to rise in the future?—I think it is very likely to do so. The workmen get higher pay and do less work than they used to do. But it would not affect materially the comparison which I make here between the Thames Scheme and the Welsh Scheme, because any rise in prices would be common to both.

20,848. (*Mr. Pember.*) It would only affect the argument from analogy, as to Thirlmere and Vyrnwy?—Yes.

20,849. (*Mr. Pope.*) An estimate from analogy might have to be varied according to the increase in prices, of course?—Certainly; it would have to be increased to meet the increase in price. I may mention that this very year I have had occasion to make estimates for reservoirs amounting to something like 5,000,000*l.*, and I have found it necessary to increase the prices to meet the gradual rise that is going on.

20,850. (*Major-General Scott.*) In all estimates certain items which are common to the Welsh and the Staines Schemes have been left out of account, I think, have they not?—Yes.

20,851. But for our purposes, I think, we should require, probably, to know what would be the state of the capital account of the companies at a certain date, say 1941?—Yes.

20,852. Do you see what I mean?—Yes, I am following you.

20,853. In some form or another we should know what the expenditure is likely to be on the whole, and do you propose to give us that in any form?—I did not propose to do so for two reasons, first, because it was not necessary for purposes of comparison, and inasmuch as the parts omitted may be taken to be common to both the Welsh and the Thames Schemes, and, secondly, I believe the Commission has already been furnished with estimates of that kind by the engineers to the several water companies.

20,854. (*Chairman.*) We have not seen the engineers to the several water companies as yet. We have only seen general experts such as Mr. Middleton and Mr. Hunter?—I understood that some time ago a request was sent to the water companies by your

secretary that certain information should be supplied, and that was furnished by the several companies.

20,855. (*Major-General Scott.*) Then we shall get that information in time, I suppose?—Yes, I think that will probably give you the information you need, sir.

20,856. (*Chairman.*) But I understand in your Table 6, in the first place, you have left out all that cost relating to the supply of 185½ million gallons which is at present authorised. Is that so?—Yes, that is so, because it is admitted that that will have to be provided, whether the water be obtained from a distance or not.

20,857. We have had a figure for that given us by Mr. Middleton. Do you agree with that figure? Mr. Middleton estimated the cost of providing the necessary storage for 185½ million gallons at 3,157,791*l.* if the pumping is not capitalised, and if the pumping charges are capitalised he estimated it at 4,104,685*l.* Have you considered that estimate at all, and, if so, do you agree with it?—No, I have not considered that particular estimate.

20,858. Then, at any rate, that will have to be added on to your estimate of cost in Table 6 in order to get the total, whatever the right figure is?—Yes, but it will also have to be added on to the cost of the Welsh Scheme.

20,859. So be it. You always speak as if we had nothing to think of but the comparison between the Thames and Welsh schemes. We want to get an idea of the financial cost of each separately. You have not capitalised the cost of pumping here in your Table 6. May I explain to your Lordship, before leaving that part of the subject, why I have not put it on; it is because the cost of that storage does not relate to the 185½ million gallons, because the companies are empowered to take that quantity without providing any more storage than Parliament has already directed. Therefore, anything that was put upon them, if they came to obtain more than 185½ million gallons from the Thames, would have relation to their prospective increase, and not to the existing state of things.

20,860. Yes, but has not the present year shown that the companies could not supply the 185½ million gallons through such a year of drought as we have just gone through, unless they had that additional storage?—I think they could with the storage they now have, and the storage they are about to make, supply it certainly even in such a year as the present, because the 35 million gallons forming part of that quantity to be provided from the Staines reservoirs, of course, has storage provided and the other 20½ million gallons to be provided by the Southwark and Vauxhall Company is also to have a certain amount of storage provided.

(*Mr. De Bock Porter.*) We have not got those costs.

(*Chairman.*) We had them from Mr. Middleton.

(*Mr. De Bock Porter.*) But they were not given separately, I think.

20,861. (*Major-General Scott.*) Then in these estimates you reserve the rights of the companies to take 130 million gallons a day, without any reference to the condition of the Thames, do you not?—Till they exhaust their power of taking 185½ million gallons. From that time this estimate supposes storage to be made.

20,862. I do not quite follow that; what I am asking is this: They have the right to take 130 million gallons a day at the present time without any reference to the condition of the river?—Yes.

20,863. Is that to be continued?—That is to be continued until they exhaust the 185½ million gallons, but after that I have supposed that they would have to provide storage for the whole.

20,864. (*Chairman.*) But you have put down in your Table 6 only the cost of providing storage for what goes beyond 185½ million gallons?—Exactly.

(*Mr. Pope.*) That must be wrong, because 185½ million gallons is not to be drawn from the Thames without provision for storage. The 130 millions is, but 185½ is the subject of recent legislation upon the matter.

20,865. (*Chairman.*) Besides, although the companies have the legal power at present to draw 130 million gallons a day from the Thames, without reference to the quantity going down the river, and without storage, yet Lord Balfour's Commission has pointed out that that was not a satisfactory state of things?—Yes.

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Mr. C. Hawksley. 20,866. And they have said that in order to make the supply of that quantity satisfactory, certain storage works ought to be undertaken?—But the companies are under no obligation to do that at the present time, or in respect of that particular quantity, and, therefore, I have not taken that into account.

20,867. (*Sir George Bruce.*) But there are times when you could not supply London even with 130 million gallons a day without storage, and you want it just as much. There are times when you could supply nothing almost from the Thames without storage?—No. The natural flow of the Thames has never, even in this year, fallen below 176 million gallons, I think it is. What you are probably thinking of is the flow over Teddington Weir after the companies have taken out their 130 million gallons.

20,868. Yes, but if you have only 176 million gallons, you would leave nothing going over Teddington Weir?—You would leave 46 million gallons if they took 130 millions.

20,869. (*Chairman.*) That is a rivulet about the size of what?—No, it is what happened this year. The flow over Teddington Weir fell to that quantity on one day in this year.

20,870. (*Mr. Pember.*) Did they ever take 130 millions?—Yes, I think they did.

(*Major-General Scott.*) One hundred and thirty-seven, I think they have taken.

20,871. (*Chairman.*) I do not know whether you have anything more to say about Table 6. You have not capitalised the cost of pumping in Table 6?—No, I have given it as an annual charge, except in Column 11; there you get the accumulated expenditure. It is not capitalised, because I have taken it as an annual charge.

(*Sir George Bruce.*) For how many years?

(*Chairman.*) Down to 1941.

(*Witness.*) It is an annual charge that will go on in perpetuity.

20,872. (*Mr. Pember.*) You have to add up all the figures, take a proper charge, and then multiply it by some proper number for the proper number of years?—No, you will see how I have dealt with it. It works out in Table 8, on the comparison.

20,873. (*Chairman.*) We will not anticipate Table 8 now; you have given us an estimate of the cost of the Welsh Scheme on Table 7?—I have; and in order to preclude discussion as to estimates or figures, I have adopted Sir Alexander Binnie's own estimate of the expense as laid before your Lordship. You will see it is set forth in his estimates handed in at Question 9441 and 9443.

(*The Witness handed in Table 7. See Appendix N, 7.*)

20,874. Do you mean to say you have adopted his estimate?—I have, because although I feel convinced from my general experience that the Welsh Scheme cannot be carried out for the amount of money put down in these estimates, I have adopted it in order to preclude any discussion on the subject of estimates.

20,875. I cannot find that the figures correspond. In the estimate handed in at Question 9441 Sir Alexander Binnie has made the cost of obtaining from Wales 114½ million gallons 10,032,250*l.* That is not your figure?—I think it includes the law and Parliamentary charges in his estimate at Question 9443—or a proportion of those.

20,876. But I am on your Table 7 for the moment, and I really cannot deal with three or four tables at once?—I mean on Sir Alexander Binnie's next estimate.

(*Mr. Pember.*) He makes an addition which I take it will give 10,629,500*l.*

(*Witness.*) If you will kindly refer to the footnotes of this Table 7, you will find that the sum of 597,250*l.* for law and parliamentary charges has been spread equally over the first 10 years.

20,877. (*Chairman.*) Does it come to this—that you have added to Sir Alexander Binnie's estimate something for law and Parliamentary charges?—No, I have only allocated that which he has put down himself in his estimate.

(*Mr. Pember.*) He has put himself, in his estimate at Question 9443, 597,250*l.* for law and parliamentary charges, and adding that to the 10,629,500*l.*—

20,878. (*Chairman.*) But that is for a totally different quantity of water?—Yes.

20,879. That is an estimate to bring 147 million gallons a day?—Yes, but those expenses would have to be incurred, or a proportion of them—in respect of the other portion of water.

20,880. So be it?—And, therefore, they have been allocated.

20,881. But you told me you had taken Sir Alexander Binnie's figures, and you referred me to Questions 9441 and 9443?—I did.

20,882. I do not find the figures in the estimates handed in at Questions 9441 and 9443 anywhere in your Table 7. They are different figures?—I think you will find in the estimate handed in at Question 9443, the sum for law and parliamentary charges is 597,250*l.*

20,883. (*Mr. Pember.*) Then the noble Chairman points out to you that those parliamentary expenses of 597,250*l.* refers, not merely to the 114½ millions, but to 147 million gallons?—Yes, but they must be incurred, practically, in the first instance.

20,884. (*Mr. Pope.*) What you mean is that you have allocated a certain proportion of that sum which is equivalent to 114½ million gallons to which the table is applied?—The whole of it, because it will have to be incurred.

20,885. (*Chairman.*) We only want to understand what you have done?—They must make the application to Parliament, and the expenses of getting land, and so on, must be incurred in the first instance.

20,886. Then, what you have done in your Table 7 is that you have added to Sir Alexander Binnie's estimate, handed in at Question 9441, the sum of 597,250*l.* for law and Parliamentary charges, which you have distributed over a certain number of years?—Yes, which Sir Alexander Binnie has inserted in his estimate at Question 9443. I want to impress you, my Lord, if you will kindly allow me, with this, that I have not added anything that Sir Alexander Binnie has not himself put in.

20,887. But forgive me, Sir Alexander Binnie puts that as the cost both of the Yrfon Scheme and the Towy Scheme, and that would require a second Act of Parliament and second law and Parliamentary charges. But I do not want to discuss it with you, I only want to get the facts first; the fact is, that your Table 7 is based upon the figures of the estimate handed in at Question 9441 with 597,250*l.* added?—Yes.

20,888. There you bring out a total—?—I assure you I am anxious to aid your Lordship.

20,889. I have no doubt you are anxious, but do kindly confine yourself to my questions; oddly enough you bring out a total of accumulated expenditure from the commencement of 9,836,415*l.*?—Yes.

20,890. That is even with the addition of law and Parliamentary charges?—Yes.

(*Chairman.*) Whereas Sir Alexander Binnie's own estimate handed in at Question 9441 is 10,032,250*l.*

(*Mr. Pember.*) Without the Parliamentary charges.

20,891. (*Chairman.*) Without the Parliamentary charges?—Yes.

20,892. (*Mr. Pember.*) And if you add the Parliamentary charges (I have done it), it makes it 10,629,500*l.*?—Yes, in column 2.

(*Chairman.*) But this is 9,836,415*l.* in Mr. Hawksley's estimate.

(*Witness.*) No, that is the accumulated annual expenditure.

20,893. (*Chairman.*) Yes.—And it includes the second instalment.

20,894. Then the 9,000,000*l.* odd is in addition to the 10,629,500*l.* in the first column, is it?—That is the accumulated annual expenditure. Column No. 2 is capital expenditure. Column No. 3 is also capital expenditure. Column No. 4 is the total of those two previous columns. Then you get in column No. 5 the annual interest that is to be paid on the total capital expenditure as shown in No. 4; and column No. 6 shows that accumulated annual expenditure. In order that you may see that, at the end of the year 1941 an annual expenditure amounting in all to nearly 10,000,000*l.* would have been incurred.

20,895. Then I repeat that accumulated annual expenditure is over and above the capital expenditure shown in the previous columns?—Yes.

20,896. (*Sir George Bruce.*) Then would you assume that the cost of the Welsh Scheme, as made out by Sir Alexander Binnie, is the addition of the last figures in column 4 and column 6—12,000,000*l.* and 9,000,000*l.*?—No, the one is capital and the other is revenue. In column No. 4 it is capital expenditure. Column No. 5 is revenue expenditure, that is, interest on the capital expenditure. Column No. 6 is the accumulated annual expenditure from the commencement of the scheme.

20,897. Then you have spent 9,836,000*l.* in interest?—By that time—all the interest during that period up to 1941.

20,898. But Mr. Middleton in his tables added the interest to the total capital expenditure to see what really had been expended at the end of a certain period, and put that down as total cost?—Yes, but I have kept the two things separate.

(*Mr. Pember.*) But they have to be added.

(*Mr. Balfour Browne.*) If the income had been greater, there would be nothing to be added for accumulated interest.

(*Mr. Pember.*) No.

(*Witness.*) It does not matter what the capital expenditure is. You really only want to know what it is you have to pay per annum, and how much will have to come out of the water consumers' pockets in that period up to 1941.

20,899. (*Sir George Bruce.*) Then is this accumulated annual expenditure in column 6 confined to interest?—Yes, entirely.

20,900. Then where is your annual expenditure for working, pumping, and so on?—That is not taken. There is no annual expenditure put down for working the Welsh Scheme, and no annual expenditure put down for working the Thames Scheme except the cost of pumping, because the cost of the two may, for this purpose, be taken to be similar.

20,901. (*Chairman.*) You mean the cost of pumping for distribution may be taken to be similar?—No, my Lord, the cost of pumping is confined to the Thames Scheme; but the cost of management and distribution, filtration, and so forth, is common to both.

20,902. (*Major-General Scott.*) Would there be any profit accruing before 1941 on these works?—On the Welsh works?

20,903. Yes, on the Welsh works?—I do not quite understand about profit.

20,904. Would there be any distribution of water, and revenue from distribution?—Yes, there would be an income before 1941. It comes into operation in 1916.

20,905. Then no account is taken of that deduction in the interest charges, is there?—No, nor is it taken into account in the Thames Scheme.

20,906. But would the profits in each case be the same, or the revenue in each case be the same—the profit revenue, I mean?—The revenue would be the same, because the same quantity of water would be supplied and the same rates charged; therefore, the gross revenue would necessarily be the same.

20,907. You are justified in omitting that from both?—Yes.

(*Mr. Pember.*) Surely your column 6 ought to be headed, not "Accumulated Annual Expenditure," but "Accumulated Interest"?

(*Sir George Bruce.*) Yes.

(*Witness.*) Perhaps that would be clearer.

20,908. (*Mr. Pember.*) That might include anything otherwise?—Yes.

20,909. Then we may take it to be accumulated annual interest?—Yes.

20,910. (*Chairman.*) It is explained by the previous column, which speaks of expenditure for interest?—Yes.

20,911. (*Mr. Pember.*) Yes; I can see it, because you add 29,000*l.* to 58,000*l.*, and you get 87,000*l.*?—Yes, "Accumulated Annual Expenditure for Interest" would have been, perhaps, more explicit.

20,912. (*Chairman.*) Then I do not know that there is anything more to ask about that table. You say that although you have adopted Sir Alexander Binnie's estimate of the cost, you think that estimate is understated?—I do. From my general experience in works

of this nature I cannot believe that they could be executed for the sum at which Sir Alexander Binnie has estimated them; and, as I understand it, even last week an additional sum was asked for at the County Council meeting.

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(After a short adjournment.)

20,913. (*Chairman.*) I think you have got a table, in which you contrast the cost of the Thames Scheme with that of the Welsh Reservoir Scheme. Will you put that in please?—I will.

(*The witness handed in Table 8. See Appendix N, 8.*)

20,914. From that table it appears that, up to the year 1941, the capital expenditure of the Welsh Scheme, reckoned on Sir Alexander Binnie's estimate, will exceed the capital expenditure of the Thames Scheme by 6,781,402*l.*?—Yes.

20,915. That is a difference of capital expenditure, and then the annual expenditure for interest alone on the Welsh Scheme by 1941 will exceed the annual expenditure for both interest and pumping in the Thames Scheme by a sum of 28,373*l.*?—That is so.

20,916. (*Mr. Pope.*) Per annum?—Per annum, in perpetuity.

20,917. (*Sir George Bruce.*) And to capitalise that you would have to multiply by so many years' purchase?—Yes.

20,918. (*Chairman.*) You have taken the rate of interest against the Thames Scheme at one-eighth per cent. higher than that charged against the Welsh Scheme?—Yes.

(*Mr. Balfour Browne.*) The witness does not capitalise that at all.

(*Witness.*) No; I show the interest only. I thought it would be clearer and simpler to state it in that way than by capitalisation; but it is easy to capitalise it.

20,919. (*Chairman.*) On the other hand, the annual expenditure in the year 1941, in the case of the Welsh Scheme, will be 5,464,179*l.* in excess of the corresponding expenditure for the Thames Scheme?—That is so.

20,920. Those excesses, of course, will have to be paid either by the water consumers or by the ratepayers?—Yes.

20,921. You have not in this table, or indeed in any of the tables, made any charge in respect of a sinking fund?—None whatever.

20,922. If the companies continue as they are, I suppose the Thames Scheme would escape, probably, any sinking fund charge in the strict sense of the word; there would be the sinking fund clauses, but there would not be any sinking fund charge if the companies continue as they are?—No redemption.

20,923. On the other hand, if any public body purchases the companies, the probability is that Parliament would impose a charge of a sinking fund to redeem the debt in a given number of years?—In all probability; but I have not thought it fair to take that into account, because it is a provision made by the present generation for its successors. Why I do not know. But Parliament has so ordained.

20,924. Parliament has not thought it fit that the ratepayers of to-day should saddle the ratepayers of another generation with a burden to which they have not consented. That is the principle of all sinking funds, is it not, that within a reasonable time the original capital should be paid off?—I do not think that is applicable to income-earning undertakings. But that is a question of Imperial politics, perhaps.

20,925. Yes, and we will not enter into that?—It is one which I am not competent to discuss. Still I have not thought it fair to introduce it into these comparisons.

20,926. On the other hand, if the companies were purchased by any public body, whether they resort to a Thames storage scheme, or whether they go to Wales, Parliament would probably impose a sinking fund charge upon them?—No doubt.

20,927. And in that case the sinking fund charge would have to be added to these totals that you have set out in Table 8?—That is so.

20,928. Now to pass to more general subjects. You have had experience both of companies and of public bodies?—I have.

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20,929. What do you say as to the comparative merits of management in the one case and in the other?—I think the management is generally better in the hands of a company. A company is not subject to being influenced by political considerations, which is generally the case with a public authority, and they look at the matter from a more solid and commercial basis than is frequently done by public authorities who are swayed, not only by politicians, but by faddists. Then, again, the company is constantly being looked after by the local authorities who are always keeping them up to the mark; whereas in the case of a local authority having the water supply in its own hands there is no one to look after them, with the results that we see in various places—Leicester, for example—where for, I think, two years great hardship was incurred in consequence of a partial water famine due to the corporation not having proceeded with the construction of their additional water works as early as they ought to have done. Other instances could be adduced.

20,930. Was the water famine in Leicester worse than the water famine in East London this year?—I think it was.

20,931. Had Leicester applied to Parliament for powers to increase their storage?—They had, and obtained those powers, but had not exercised them with sufficient rapidity.

20,932. Is it not your experience that the corporations and public bodies that have acquired the water supplies of their district have ultimately reduced the charge to the consumer?—Not usually until a considerable period has elapsed; and then they have in many instances been able to effect a reduction. But then in the meantime there has very frequently been a large loss incurred until the time when the revenue meets the expenditure.

20,933. Exactly. That is, if a public body has got these undertakings, ultimately the increase of income goes to the benefit of the water consumer instead of going to the benefit of the shareholders?—Yes, but in the meantime the water consumer or the ratepayer has had to bear a very considerable loss; and there are cases which I will cite where the charges have actually been increased.

20,934. Please cite instances to us?—For instance, Heywood, where with a population in 1891 of 66,000 odd, the water undertaking was transferred to the corporation by agreement in 1877, but within five years from that date the corporation came to Parliament for power to increase their water charges; and in 1883 an Act was passed authorising the corporation to largely increase their water rates, and also to throw part of the deficiency on the water consumers who resided outside the borough.

20,935. Was the district outside the borough supplied in bulk, or how was it supplied?—They were supplied, I think, in detail. More than half the total number of consumers were outside the borough.

20,936. There was not much consideration shown to the outside consumers, I suppose?—No, the outside consumers had to assist in meeting the deficiency as well as the inside consumers.

20,937. (Mr. De Bock Porter.) Was that deficiency caused by any exceptional circumstances?—It was due in part, I suppose, to the sum that had to be met for the payment of the interest on the purchase and partly probably to the works that had to be undertaken to increase the supply.

20,938. (Chairman.) Then the same increase and the same hardship, if it be a hardship would have occurred if the water supply had remained in the hands of a private company?—With this difference, that then the hardship would have fallen on the shareholders and not on the ratepayers or the consumers.

20,939. (Mr. De Bock Porter.) But if they went for additional powers, would they not also go for additional rates if they could not provide the supply except at a larger cost?—They might do; but no doubt they would be vigorously opposed by the local authority, and they might not succeed in getting those rates advanced, or, if they did, they might only succeed in getting them partially advanced.

20,940. (Chairman.) But the water companies would go for such rates as would afford 10 per cent. back dividend, and all the rest of it?—Not on new capital. It does not matter what the interest is on the new

capital, because it is subject to the Auction Clauses, and the operation of the Auction Clauses is this: that all premiums are added to the capital without being subject to dividends, and therefore the result is that the water companies usually raise their money at 3 or 3½ per cent., according to the nature of the security, that is to say, when the shares are put up for auction a 10l. share will fetch such a sum as will realise to the purchaser only somewhere between 3 and 4 per cent. on his money.

(Mr. Balfour Browne.) That was not so at the time that this took place at Heywood. The Auction Clauses had not been put upon water companies then.

(Mr. Pember.) I daresay not.

(Witness.) That was in 1883, and I almost think they were. I think so, but I will not be quite sure. They are now, invariably.

20,941. (Mr. De Bock Porter.) Are there no cases of private undertakings going to Parliament for increased charges for exceptional works?—There are some cases, but not very many, and in some cases they are not successful in obtaining what they seek.

20,942. (Mr. Pember.) Could you give the instances of any that have been successful?—In the case of Sheffield.

20,943. That is only one, and that for only a definite period?—It was successful; but only for a period of 25 years. That was after the disaster which cost the company about 400,000l.

20,944. (Chairman.) What was that?—The bursting of the Dale Dyke Reservoir, its giving way at least; it was caused by a landslip, which carried away the foot of the embankment.

20,945. A corporation, I suppose, almost always gets its increase of charge if it demands it in Parliament?—I think, usually, because they have to carry on their undertaking either at the expense of the water consumer or of the ratepayer, who may or may not be a water consumer. Then the effect at Heywood of the water charges on the domestic consumer is illustrated in a memorandum which I have here, and which I will hand in, entitled "Memorandum showing some of the Financial Results of the Transfer of Water Undertakings to Municipal Authorities in certain Towns." At Heywood on houses of 10l. rental the increase was 5s. per annum; 20l. rental, 10s. per annum; 40l. rental, 20s. per annum; and 60l. rental, 30s. per annum. So that the charges were increased by 33 per cent.

(The Witness handed in Memorandum. See Appendix N, 9.)

20,946. (Mr. De Bock Porter.) Have those increased charges been maintained up to the present time?—So far as I know, they have.

20,947. (Chairman.) Had there been a loss between the purchase of the undertaking in 1877 and the passing of this Act for the higher charges in 1883?—Yes; and the borough surveyor stated in his evidence that between 1877 and 1882 that loss amounted to 11,222l.; and that the loss in a single year, 1882, equalled a rate of 1s. 6d. in the £. on the whole of the property within the borough. Then the corporation obtained another Act in 1898, from which it appears that the deficiency of water revenue amounts to 25,000l., and the total water indebtedness to 462,000l. odd.

20,948. (Mr. De Bock Porter.) Had the private undertaking in that case been successful before the transfer took place?—I do not think I can answer that question, except generally. I think we may take it that it had been, or the corporation would not have sought to acquire it.

20,949. (Chairman.) How do these increased charges of Heywood contrast with the London Water Companies' charges. What do they amount to in the way of percentage on the rental of a house?—They are higher than the London charges.

20,950. That only shows that Heywood, for some reason or another, is an exceptional case?—I think you will find presently, my Lord, from some tables I will hand in to you, that it is not so exceptional a case as is frequently supposed.

20,951. We will go on with the examples contained in your Memorandum. Take Blackburn, for instance?—There, with a population of 130,000, the undertaking was transferred to the corporation by agreement in 1875; and in 1882 the corporation came to Parliament

and obtained power to increase the charges to water consumers and also fix a rather high minimum of 13s. per annum for small houses. They also obtained power to increase the water rates both within and without the borough, to meet any deficiency which might arise in the water revenue. Then a 10l. house had its authorised charge increased 8s. per annum; a 20l. house, 16s. per annum; a 40l. house, 32s. per annum, and a 50l. house, 40s. per annum.

20,952. Did they pay their way after they had got those increased charges?—No; even though they got such largely increased charges, they still show a loss after 23 years of working, the deficiency for a year in a return recently issued being 970l.

20,953. (*Mr. De Bock Porter.*) In that case, does it appear that any charge for water used for public purposes goes to the credit of the water undertaking, or is this the loss after taking that into account?—I am not sure how they treat the water for public purposes, whether they charge it or not in their accounts. Of course, properly, it ought to be charged.

(*Mr. Pope.*) My recollection of Heywood, certainly is that it was charged as against the water income. The department which used the water, nominally, in the account paid for it.

(*Chairman.*) Therefore, it came out of the rates.

(*Mr. Pope.*) It came out of the rates.

(*Witness.*) I should think it would be so in a concern which was not paying its way.

(*Mr. Pope.*) At any rate, it was so in Bury, and I suppose it was so in Rochdale, too.

(*Mr. Balfour Browne.*) We are not talking of Rochdale; we are talking of Blackburn. Sometimes it is not charged against the water rates; I know cases where it is not charged.

(*Witness.*) Sometimes they deal with it in one way, and sometimes in another, according to whether the department wants to show a loss or a profit.

20,954. (*Chairman.*) This deficiency of 970l., which is the last return, as I understand, is not very large. It looks as if they were beginning to clear their accounts and pay their way?—Yes; it is for one year, it is not the balance; it is just the deficiency of that year.

20,955. Now take Rochdale?—Rochdale had a population of 71,000; the water undertaking was transferred from a company to the corporation by agreement in 1866. Since that date the corporation have twice obtained power from Parliament to increase their water rates—once in 1875, and again in 1884. In the construction of their reservoirs the corporation met with very great difficulties, and a very large expenditure had to be incurred in excess of the estimated expenditure—very large indeed. I am well able to speak on that point, because my firm were the engineers for the work, and we encountered difficulties which took us years to surmount, and cost a very large sum of money, although the reservoirs were comparatively small.

20,956. (*Mr. De Bock Porter.*) Would the private undertaking, if it had gone on, have been able to cope with those difficulties?—They would have had to meet them, or they would probably have had to go to Parliament too for some increase in the charges; but I take it the shareholders would have had to bear a portion of the burden, the whole of which had to be borne by the ratepayers or water consumers in that case.

20,957. It was not a question of mismanagement on the part of the corporation?—No, there was no mismanagement; in fact, it was a very well-managed undertaking.

20,958. It was misfortune?—It was misfortune—that misfortune which may befall anyone who enters into the construction of large storage reservoirs. We do not know what will be met with in the course of carrying them out. There one of the puddle trenches had to be made 75 feet deep in running sand; and we were working for four months, day and night, week days and Sundays, and never ceased: one set of men went into the trench directly the other came out—did not even come out for their meals.

20,959. (*Chairman.*) And your suggestion, I suppose, is that those risks had, in the public interest, better fall on the shareholders than upon the ratepayers?—In the interests of the water consumers and the public, certainly—not in the interests of the shareholders.

20,960. Did Rochdale increase its charges in consequence?—They did, and the town clerk stated that between 1869 and 1883 no less than 58,740l. had been levied in the shape of borough rates-in-aid to meet deficiencies in the water revenue. Again, the town clerk stated that unless a second increase of water charges was authorised the borough would have to raise 15,000l. annually for the next 25 years to meet expected deficiencies in the water revenue.

20,961. (*Mr. De Bock Porter.*) If that had remained as a private undertaking, it would have been swamped, I presume?—Yes, in an extreme case like that I quite agree that they must have obtained some relief from Parliament. But I am afraid the shareholders would have had to bear a portion of the loss. In last year, 1897, the deficiency made up by the rate-in-aid was 3,862l., although the transfer occurred 32 years ago.

20,962. (*Chairman.*) That was one year's loss?—Yes.

20,963. You may as well give us, as you did before, the amount of increased charges that was authorised to help out the corporation?—Perhaps it would be sufficient if I gave you the last column—the second increase. Rent of house, 5l.; 13s. per annum, as against 7s. 6d.; 10l. house, 25s., as against 15s. authorised charge by the company; 20l. house, 50s., as against 30s.; and a 50l. house, 125s., as against 75s. Then take Stockton and Middlesbrough with a population of 187,000 odd. That undertaking was transferred after arbitration to determine the price, on the 1st January, 1878, just 21 years ago; and in the following year the charges to domestic water consumers were increased by 13 per cent. That was before any new works were made. Then, notwithstanding that, the deficiency between 1878 and 1888, a period of 10 years, amounted to no less than 46,852l., or an average of 4,260l. per annum. The rate-in-aid for the first three years was about 8d. in the pound on the rateable value of the boroughs; and in the later years of the decade about 3d. in the pound. Large new gravitation works have been constructed since the transfer and the loss in the year 1896-7 is stated to have been 26,629l. equivalent to a rate-in-aid of 11d. in the pound.

20,964. (*Mr. De Bock Porter.*) Was that the result of disaster or was that an exceptionally bad bargain?—Neither. The amount paid to the company, though often referred to as being an excessive amount, was not an excessive amount; and as I advised the company at the time they would have done well to retain their undertaking, even if they had to refuse so large an award.

20,965. (*Chairman.*) Do you remember how many years' purchase of the net revenue was given in that case?—The company was earning its maximum dividend and had even a surplus revenue, and money being at that time worth 4 per cent., Parliament gave them 25 years' purchase of the maximum dividends, and it added that the arbitrator was to determine the amount payable in respect of prospective value and compulsory sale.

20,966. What prospective value could there be if they were earning their maximum dividend?—Because at that time the Auction Clauses had not been introduced, and therefore, if they had gone on, and had been authorised to raise further capital, they would have made very considerable additional profits on that capital; they would have made 7 per cent.

(*Mr. Balfour Browne.*) It was assumed, my Lord, that they might go to Parliament and get further capital powers.

(*Witness.*) On which they would be authorised to receive a 7 per cent. dividend.

(*Mr. Balfour Browne.*) Quite so.

20,967. (*Chairman.*) You mean they got an allowance in respect of capital not raised, but which might hereafter be raised?—Yes.

(*Mr. Balfour Browne.*) I think that is so.

(*Chairman.*) It seems to me to be unintelligible.

(*Mr. Balfour Browne.*) It seems to me wrong in law; but it was done in that case, and it was calculated upon that they got 213,000l. in addition.

(*Chairman.*) In addition to 25 years' purchase of the maximum dividend.

(*Witness.*) Yes, they got 213,802l.

(*Chairman.*) Who was the arbitrator?

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(Mr. Pember.) There were three, Mr. Thomas Hawksley was one.

(Mr. Balfour Browne.) Mr. Thomas Hawksley was one and Mr. Venables was another and Mr. Higgin of Manchester, was umpire.

20,968. (Chairman.) Was anything given for compulsory sale there?—They did not divulge what was given for compulsory sale.

20,969. It was an arbitration under statute, was it?—Yes.

(Mr. Pember.) I will read you the clause, if you like.

(Chairman.) I will not trouble you to do that.

20,970. (Mr. De Bock Porter.) That result was brought about by this extraordinary award, was it?—No, the company did not get a shilling more than they were justly entitled to.

(Mr. Balfour Browne.) I think it is explained by what Mr. Hawksley has said here, that since that award very large gravitation works have been carried out at an enormous expense, and I think that accounts for it really.

(Witness.) I think the Chairman of the Water Committee has admitted that the companies' estimate of prospective value has been realised. There came a time of bad trade which caused a depression for a time, but then things became better again.

(Mr. Balfour Browne.) I think if they had gone on content with drinking Tees water, they would have got the profit that Mr. Hawksley has been referring to, equivalent to the 213,000*l.* But they went for a much larger scheme—a totally new scheme.

(Witness.) But they applied to Parliament two or three times for an extension of the power to take water from the Tees.

(Mr. Pope.) Yes, they did not face the gravitation expenditure for a long time. As long as they could possibly put it off, they put it off.

(Mr. Balfour Browne.) They began almost immediately with one reservoir, but they have constructed another one since.

(Mr. Pope.) I mean there was a long time before the construction of the new works.

(Mr. Pember.) The one which my friend refers to is a very small one—the first one.

(Witness.) Yes, they postponed, and I cannot help thinking wisely, as long as they could, taking the hill water, and were wishful to continue taking the Tees water, which they had abused as being unfit for use until they became the possessors of the water undertaking—a state of things which is not uncommon.

20,971. (Chairman.) Have you any other instances of rates-in-aid?—Yes, there are rates-in-aid at Cardiff, Swansea, Liverpool, Manchester, and Bradford; but the examples of which I have given particulars will suffice.

(Mr. Balfour Browne.) I think as to what Mr. Hawksley is referring to there, certainly neither in the case of Liverpool nor Manchester is there any rate-in-aid. They divide the charges differently. There is what they call a public rate, which falls upon all the owners of property in the town, whether they take water or not, and I think that is what Mr. Hawksley is referring to. There is no rate-in-aid either in Liverpool or Manchester.

(Witness.) It is a rate-in-aid which is euphoniously, I think, called a rate for public purposes, or for the extinction of fire. It is covered up as much as possible by a pleasant-sounding name, but still that is what it amounts to.

(Chairman.) It does not sound to an experienced mind very unfair, that for watering streets and putting out fires, and purposes of that sort, all ratepayers should contribute.

(Mr. Balfour Browne.) It is an arrangement recommended by the Duke of Richmond's Commission.

(Witness.) In the case of a water company the water company has to provide all water for putting out fires without any such contribution to their revenue.

(Mr. Balfour Browne.) Not for street watering.

20,972. (Chairman.) Not for watering streets or flushing sewers. There they get paid?—They do get paid, but really the payments for those purposes are comparatively small.

20,973. Although I agree with you that it has features of analogy to a rate-in-aid, yet it is not a very unfair rate-in-aid that all ratepayers should contribute to what is really a purpose beneficial to them all?—No, but I think they contribute very much more than the corresponding charge would be if only the water used were charged for. It is a very large charge.

20,974. You say these corporations make use of the rates for public purposes as a shield to cover what is really a contribution to the domestic supply?—I think that is really what it amounts to when you come to unravel it.

(Chairman.) I do not say whether you are right or wrong.

20,975. (Mr. De Bock Porter.) In Manchester I believe the rate is 1*s.* in the pound, 3*d.* in respect of the municipal water that is wanted, and 9*d.* for private supplies, but there are no extras whatever. The percentage of 5 per cent. covers everything?—I daresay you are right. I have not the charges before me at this moment.

(Mr. Balfour Browne.) That is so.

(Witness.) Then I should like, if you will allow me, to point out that in numerous places where a profit, great or small, is now shown, large losses have been incurred in former years since the transfers took place. It will be sufficient perhaps to quote one—Huddersfield—where the commissioners' works—the works were formerly owned by commissioners—were bought by the corporation in 1869, and between that date and 1891 large sums were raised by rates-in-aid to meet revenue deficiencies. For instance, in 1889 there was a deficiency of 6,700*l.* for the year, and, in 1890, 4,943*l.* Since 1890 the revenue income has exceeded the revenue expenditure.

20,976. I should like to know whether that is not really the general rule in these cases of purchase by corporations, namely, that they go through a period of stress and extra expenditure and loss, if you like, but that they recover themselves at last and have a surplus?—I think that if they pay for the undertaking they purchase a fair sum, including the amount due for prospective interest, it follows that there must be a loss in the earlier years, because they are really purchasing a deferred annuity.

20,977. (Mr. De Bock Porter.) But then it is to the interest of the community that they should get the ultimate advantage?—The community that gets the ultimate advantage is not always the community which provides the deficiency, their grandchildren will probably reap the ultimate advantage by having their water practically free—free from everything but working and maintenance expenses. But why we should doom our grandchildren to live in the condition of paupers as regard their water supply, I really do not know.

(Mr. Balfour Browne.) Paupers!

(Mr. Pember.) I should like to be such a pauper.

(Witness.) It is a sort of water almshouse for future generations, I should like it myself, if somebody would pay the rent of my house; but nobody is kind enough to do it.

20,978. (Chairman.) Surely, the question is whether you shall adopt that system by which at least our grandchildren shall derive a benefit or whether you shall leave the whole of that future profit to go into the pockets of shareholders for ever?—That opens up the question of redemption.

20,979. You do not doubt, do you, that these water undertakings are capable of being ultimately worked at a profit by a corporation unless there is gross jobbery or mismanagement?—No, I think ultimately they will be if the rates are sufficiently high.

(Mr. Pember.) It all depends on that.

20,980. (Chairman.) Take the London companies; are not those rates sufficiently high to insure an ultimate profit to any public authority that works them with decent economy and skill?—If they adhere to the Thames as a source of supply, certainly. If they go elsewhere, it is questionable.

(Mr. Pember.) After all, my Lord, the only profit that could arise would be on the capital they subsequently expended.

(Witness.) Certainly.

(*Mr. Pember.*) For instance, if they pay West Middlesex a proper price for their 10 per cent. which the West Middlesex have got, they can never get any profit out of that.

(*Mr. Pope.*) Not on that capital.

(*Witness.*) They are buying a prospective interest.

(*Mr. Pember.*) The only profit they could expect to get would be out of the capital they will expend.

(*Chairman.*) Pardon me, the West Middlesex income goes on growing every year.

(*Mr. Pember.*) And the water consumers get the benefit of it now.

(*Chairman.*) Yes, in the case of the West Middlesex, they do.

(*Mr. De Bock Porter.*) That is only one case.

(*Mr. Balfour Browne.*) That is West Middlesex alone. Parliament has provided that in their case; but there is the Lambeth.

(*Mr. Pember.*) As the time goes on that would be the case for them all, and what you have got to pay for now is what Mr. Hawksley called a deferred annuity. You have got to pay for the chance of their all being able to do that. Therefore you must consider that account closed, and therefore the only profit they can get seems to me to be a visionary one—the difference between what they will receive from the water which is got by new capital and the amount they have to pay the bondholders for the new capital. There ought to be no difference except for management.

(*Witness.*) If the award were exactly a fair one there would be no difference. The way of valuing these undertakings, as your Lordship is aware, is that you take the maintainable profit, and then you ascertain what the prospective profits are; you discount those for present value, and that is the sum that is to be paid.

(*Mr. Balfour Browne.*) Deductions for present deficiencies have to come off.

20,981. (*Chairman.*) I suppose it is quite clear that unless there is some prospective income the purchaser cannot look to the probability of his being able to reduce water rates or give the water consumer much benefit?—No.

20,982. But if there is a prospective income, you say the arbitrator will make him pay the fair value of that discounted to a present price?—That is so.

(*Mr. De Bock Porter.*) It must be to the advantage of the corporation ultimately—the consumer represented in the future must get the benefit.

(*Mr. Pember.*) I do not see it.

(*Witness.*) Nor do I. I do not think the consumer will probably get the benefit, because the corporation is not compelled to reduce its rates when the income is equal to the interest to be paid. They are generally empowered to carry any balance in aid of district rates, and so forth.

(*Chairman.*) Still, you must assume that corporations will behave in a reasonable way, and if their water income exceeds their water expenditure they would probably reduce the rates.

(*Mr. Pember.*) Then there is no profit to the ratepayers.

(*Witness.*) I am afraid that is not usually the case, because it is a very nice little nest egg, which enables them, at the expense of the water consumer, to reduce the rates to the general ratepayer, who is not always a water consumer.

20,983. (*Chairman.*) That is indirectly a rate-in-aid; if they reduce their rates, eking out their municipal accounts by the help of the water surplus, they are making the water consumer pay an extra rate?—And that is what you would find on investigation is usually done.

(*Mr. Pember.*) The only profit shown would be that sort of profit which is represented by the old proverb of people living on each other's wool. They borrow the requisite amount of money for finding the water, and they can manipulate the price up or down, according as they wish to make the consumer or the ratepayer earn a profit; but it is only a seeming.

(*Witness.*) I act for a good many of these authorities, and I see behind the scenes.

20,984. (*Mr. De Bock Porter.*) You will admit, will you not, from the experience that has already taken place during the past generation, that there are a number of municipalities at the present time which are making a profit out of these undertakings?—No doubt some of them are, and especially those which have arrived towards the end of their period of redemption.

20,985. That period is not a very long one, taking the life of a community into account; it is a question of, perhaps, 10, 15, or 20 years?—No; the period of redemption is hardly ever less than 60 years for an undertaking of this character.

20,986. But some municipalities have already begun to make a profit and get an advantage in reduction of rates?—Some of them; but then, even there, it is always necessary to see what the past history has been, because you may find a corporation now making profits; but against those you must set the deficiencies which they have had to make up by rates-in-aid of the water charges in previous years, and you may go on for 20 or 30 years having losses.

20,987. (*Chairman.*) Yes, but then those losses fall on the ratepayer for the time being?—Yes, or the water consumer, as the case may be.

(*Chairman.*) It is no diminution of the advantage which the ratepayer 30 years hence gets by having his rates reduced that somebody else 20 years ago had to pay more.

(*Mr. Pember.*) Of course, if you do not look at the community as a whole, present and future, that is true.

(*Witness.*) But surely we should look at the present, I take it, and let the future generations look after themselves.

(*Chairman.*) But in any question of purchase you must consider the future generation as well as the present.

(*Mr. Pember.*) Quite so, and if you consider them both together, I maintain that if the proper price is paid there will not be either profit or loss.

(*Witness.*) Just so.

(*Mr. Balfour Browne.*) I maintain the reverse.

20,988. (*Mr. De Bock Porter.*) Do you know any corporation that would like to go back to private management?—No, because quite apart from results, they do not like to give up the power and the patronage which the possession of a water undertaking gives them.

20,989. Do you think, if the consumers were polled, they would like to go back?—It is very difficult to say, because the consumer seldom understands these matters. They are put before them in a popular kind of way, and the consumer, or the ratepayer, is very much caught by what is put before him in that way, and he does not take the trouble to investigate the correctness or otherwise.

20,990. The consumer of to-day knows whether he is paying less or more for his water?—He does not know it; he does not find it out; it is very rarely that the water consumer really sees what the result is.

20,991. (*Chairman.*) Do you mean to say a water consumer does not know what the result is when he is charged less every year by the water rate collector than he was the year before?—Yes; but that, I think, does not very frequently happen to the water consumer.

20,992. Are not all these corporations advancing in that direction? I agree they have not all attained that result; but are not they all advancing in that direction?—They must be, because ultimately the time will come when they will have to redeem the whole of the capital, when the charges for water must fall. But then, as I have said before, that is the future generation living on the alms given to them by the present.

(*Chairman.*) We cannot at this moment go into the mass of evidence on that; but we have had many instances in which water charges have been reduced already by corporations.

(*Mr. Pope.*) I do not think so.

(*Chairman.*) Yes, we have indeed.

(*Mr. Pember.*) You may have had one or two.

(*Mr. Pope.*) I think you will find, in almost all the cases, the benefit has gone to the ratepayer, and not to the water consumer?

(*Chairman.*) No.

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(Mr. Pope.) There may be some.

(Chairman.) For instance, I have got the Glasgow rate reduced from 14d. in the £ down to 6d., and that between 1856 and 1896. That is in the table handed in at Question 4137.

(Witness.) One would like to examine the principle of their Redemption Fund. I think, as originally provided, the redemption was a gradually diminishing amount.

20,993. No, it was not?—In later years it has generally been made of uniform amount, both interest and principal.

(Mr. Balfour Browne.) In the case of Manchester, I think it was shown that 2,600,000l. had been spent on the Thirlmere Scheme without increasing the rates a penny.

(Mr. Pember.) Without increasing what rates?

(Mr. Balfour Browne.) The water rates.

(Mr. Pember.) The water rents, you mean?

Mr. Balfour Browne.) Water rents.

(Witness.) That shows, I think, that there must have been a large profit made before, or else that could not have been done.

20,994. (Mr. Balfour Browne.) A large profit made by the corporation before, you mean?—Yes.

(Chairman.) I put my hand on Glasgow by a mere accident. That is one case that was given to us. The purchase seems to have been in 1856-7.

(Mr. Pope.) There was a supply from the Clyde.

20,995. (Chairman.) The first two years were of profit, then there were some years of deficit, and then an increasing surplus, which was followed by a reduction of charge in the domestic rate to what I have told you, from 14d. in the £ to 6d. in the £. It is true they levy a penny rate there, called the Public Water Rate, besides the domestic charge; but, adding the penny, there was a considerable diminution. However, you are not acquainted with the case of Glasgow?—Not sufficiently to discuss it.

20,996. Your clients seem all to have been unfortunate—all failing corporations. Have you had no successful corporations among your clients?—Yes.

20,997. Then let us have a successful case from you?—I can mention to you Derby as making a very considerable profit; so is Leicester.

20,998. When did Derby buy?—I think Derby bought in 1879.

20,999. Have they already reduced the rates to the water consumers?—No; I think they maintain the rates to the water consumers, but they make considerable profits.

21,000. What do they do with those profits?—I think they expend them in part in extensions, and they are in face of a considerable expenditure for additional works.

21,001. (Mr. De Bock Porter.) Still, it has gone in reduction of rates practically?—It has gone, you mean, to the general public?

21,002. Yes, otherwise they would have had to pay rates to those purposes to which they have applied the profit from the water undertaking?—To some extent, no doubt; but then, you see the ratepayers and the water consumers are two different sets of people. It does not follow that a water consumer is a ratepayer.

(Chairman.) It may be there is a ratepayer who is not a water consumer, but there is no water consumer who is not a ratepayer, I should think.

(Mr. Pember.) That does not touch the point, I should think.

21,003. (Chairman.) All water consumers are ratepayers?—A man may be a water consumer to the extent of his dwelling-house, and to the small extent of his manufactory.

21,004. Of course, not to the extent of somebody else's house?—But then the rate he pays, of course, is a rate on his manufactory, so that his interest is not the same.

(Chairman.) What I mean is, that a relief of the rates is a relief of the water consumer.

(Mr. Pember.) It must have come out of the pockets of some members of the community.

(Witness.) Yes.

21,005. (Mr. De Bock Porter.) The community, as a whole, there have had an advantage which otherwise would have gone to the profits of the undertaking?—To some extent.

21,006. Yes, to the extent of the profit?—No, not entirely; for this reason: that if the company had continued to exist it would have come under the operation ultimately of the auction clauses, and, therefore, in that way the company would have raised its money practically at the same rate as the corporation, so that the water consumer would have had the benefit.

21,007. Yes, but the water consumers in the one case would have had to pay dividends to the shareholders, and, in the other case, they get the advantage to the community in the expenditure that you have just named?—Yes, but in the case of the water company the water consumer would not have had to pay it at all, because the company would have raised its capital at somewhere between, perhaps, 3 and 3½ per cent., and, therefore, the water consumer would have only had to pay rates sufficient to provide that interest. Although there might be a nominal dividend of 7 per cent., the shares would have sold in the market for so much more than their nominal value, and the premiums would have been applied to capital purposes without bearing a dividend; but, in reality although the shareholder received nominally 7 per cent., he would be receiving only 3 or 3½ per cent. on the money he had invested.

21,008. (Chairman.) The only difference that I can see between that case and the case of the expenditure of the corporation is, that there would be no sinking fund to provide?—No; but then the water consumer would have got an advantage instead of the ratepayer generally.

21,009. I say a water consumer would only have had to pay what you call a 3 or 3½ per cent. interest upon the capital really raised, and would not have had to provide for a sinking fund upon the capital?—That is so.

21,010. Whereas if it is the corporation that raised it, he would have had to pay possibly not only 2½ per cent. interest, but a sinking fund besides.

(Mr. Pember.) And add to that—would have thought of his great-grandson's happiness.

(Witness.) Yes.

(Chairman.) Well?

(Mr. Pember.) That would have been his boon.

21,011. (Sir George Bruce.) Do you think a corporation will ever work as cheaply as a company that has to earn a dividend for its shareholders—a corporation that gains nothing?—I do not think usually they do, because they are, of course, under a changing management. There is not that continuity of management that there is in the case of a company, and I think that in nearly all cases municipal management is more costly than company management.

21,012. Will not that go far towards taking away from the town the advantages which would otherwise be got, that is to say, the water will not be produced at so cheap a rate if it is done by a corporation as if it is done by a company?—That is so.

21,013. (Chairman.) I suppose you advise all the corporations who are clients of yours immediately to sell their undertakings to a private company?—No; such advice would be of no service if it were tendered.

21,014. Why of no service, if you were to point out to them in the powerful way you have done just now, that it is a dead loss?—But then they would expect the companies to bear that loss if they bought from them; they would expect such a price from the companies as to transfer the loss to the companies.

21,015. You say the company is a much better arrangement for the consumer; why do you not advise the corporations to part with these undertakings to companies?—That would not at all suit the corporations, it would be no use giving such advice because you see they would not sell their undertaking at a price which would make it remunerative to a company to buy, and then, too, they would not like to lose the prestige that they have by having the water supply in their own hands.

21,016. Do you mean to say that the management of water undertakings brings prestige to a corporation—it brings nothing but abuse to a company, as far as my experience goes?—That is so, very much; but the

corporations like to have the power of management; I do not know why, but you always find it is so.

21,017. That is your experience of corporations, is it?—Yes.

21,018. You dropped a hint about the patronage that a corporation likes to have in its hands just now: have you found that?—Yes; you see they employ a large staff of men in connexion with their waterworks, and I think that is always pleasant to a member of a corporation.

21,019. He can provide for a certain number of people, I suppose?—Sometimes it is made use of in that way.

21,020. (*Sir George Bruce.*) To get votes?—I think votes probably enter into the consideration; I am sorry to say they do in most things nowadays.

(*Mr. De Bock Porter.*) Can you give us any case of a municipality that is better supplied now by a company than it would be by the municipality itself, where the state of things as regards supply and the undertaking, as a whole, is better in the hands of a private company than it would be in the hands of a municipality.

(*Mr. Pember.*) I should take London.

(*Chairman.*) No, no.

(*Mr. De Bock Porter.*) Apart from London, please; we are considering the case of London.

(*Chairman.*) We have not got a public supply in London.

(*Witness.*) You mean, where it is now in the hands of a company.

21,021. (*Mr. De Bock Porter.*) Where things are better?—Than they would be if it were transferred.

(*Mr. De Bock Porter.*) Yes.

(*Mr. Pember.*) It is very difficult to see.

(*Witness.*) Take Norwich; I feel sure that that is a case in which they would be the worse for a transfer; and Yarmouth, Lowestoft, Bristol, Sunderland, and Southampton.

21,022. (*Chairman.*) You have already given us your opinion that London would be much worse for the transfer?—I think so.

21,023. How do the rates of those provincial corporations compare with the London water rates?—I am sorry to be obliged to impose two more tables upon your Lordship in answer to your question. (*The Witness handed in Tables 10 and 11. See Appendix N, 10 and 11.*)

21,024. I am now accustomed to the burden?—These tables are somewhat unique, and have been prepared at very great cost.

21,025. They are difficult to grasp at a glance; perhaps you will kindly explain what they are?—May I preface it by explaining to your Lordship the means by which they have been prepared?

21,026. Yes?—I was instructed by the water companies to get together such information as would place before this Commission a true comparison of the payments which have to be made in the provinces as compared with those which have to be made in London, and I was authorised to obtain for that purpose the services of Dr. Pole, Mr. Eaton, and Mr. Alexander. Those gentlemen have been at work for months past in obtaining the information which appears on these tables, and putting it into a shape which makes it comparable. Very often information is obtained, and the rates put down just as they are received, but then they are not comparable, because in one place the charges are made on the rack rent or gross rent, and in another place, on the rateable value. In order to put them on a proper basis, you have to ascertain what the deduction in each town is in respect of the rateable value, and then work out after that reduction what the corresponding water charge will be. All that has been done, after very careful consideration as to what would be a fair and proper mode of preparing these tables, in order to present to your Lordship the really true comparative charges; and we think that that has been accomplished. Now you will see Table 10 contains the charges made in 19 different towns, where the water supplies are in the hands of local authorities; they are all, I believe, corporations—the population as mentioned at the top of the table being 100,000 or upwards in each case. If you look at column 1, you will find a house having a gross rental of 10*l.*

21,027. The heading is—"Gross Estimated Rental or Gross Value"?—That is really the rent the man pays who lives in the house.

21,028. Then the whole of that first line applies to a house for which a man pays 10*l.*—

(*Mr. Pope.*) Actual rent.

21,029. (*Chairman.*) Whether it be in London, or Blackburn, or Bradford?—London is not in this table; it is whether it be in one of these towns, or in another. We come to London on Table 11.

21,030. (*Mr. Balfour Browne.*) The very next column is headed "London Rateable Value"?—That is the equivalent rateable value in London, that is to say, if a man lives in a house for which he pays 10*l.* a year in London, his rateable value is 8*l.* under the Valuation Act.

(*Mr. Pember.*) That is Torrens' Act.

(*Witness.*) Take Bolton, for instance. A man who lives in a house for which he pays 10*l.* a year rent pays 17*s.* 8*d.* a year for his water; if he happens to live in a house in Manchester of the same rent, he pays 7*s.* a year for his water, or in Nottingham he pays 1*s.* a year for his water. Then take the case of a 30*l.* house; you will find that in Bradford he pays 2*l.* 8*s.* a year for his water, or in Derby 1*l.* 16*s.*

21,031. (*Chairman.*) In Brighton he only pays 18*s.*, I see?—Brighton is an exceptionally low place, that is to say, the payments are exceptionally low in Brighton—I did not mean to cast a slur on the character of Brighton. In Manchester he would pay 1*l.* 5*s.*, and so on.

(*Mr. Pember.*) Brighton has got its water at its doors in the Chalk on the South Downs. Nearly all their pumping stations are only two or three miles off in the Downs.

(*Witness.*) Yes, and there is a history attached to it, too.

(*Chairman.*) A history?

21,032. (*Mr. De Bock Porter.*) An advantageous purchase?—Yes, there was a transfer when there were, I think, competing companies, and they got the undertakings for a comparatively low price. Then they were put under certain restrictions by Act of Parliament, but it is a place where the water charges are unusually low. I do not know whether I have succeeded in making that table clear.

21,033. (*Chairman.*) I understand it now, only I do not quite see what bearing that column of rateable value has upon the rest?—It is to facilitate, if you wish it, comparison with the other table. You may wish to know, in the case of a man living in a 30*l.* house, what would be his rateable value in London. It is 24*l.* there, but it is not 24*l.* in these other places, it is all manner of varying charges.

21,034. Only the 30*l.* house in London, which is rated at 24*l.*, will probably be a much inferior house to a 30*l.* house in Hull, or Leeds, or Oldham?—Yes. That is because it carries with it the advantage of living in London. Say a man who lives in Liverpool—

21,035. Never mind the reason; that is the fact, is it not, that the rent of houses of the same size and class is higher in London than in most of these towns?—In all probability, but you may find houses in neighbourhoods which are going down; you will find very fine houses which are to be had in London for comparatively small rentals.

21,036. If you go to Grafton Square, you may get a house of the date of Charles II., which was a nobleman's mansion, for a small rent?—Yes, if the place has become unfashionable. If you will kindly look at column 22 of Table 10, you will find the average of all these charges.

21,037. I daresay it is my fault, but an average never conveys anything to my mind?—It is necessary to enable you to compare, as has been done in Table 11, the charges in London with the average charges in these 19 places.

21,038. The average charge is true for no place?—No, it is not true for any individual place, but it shows the relation between the charges which are made generally in provincial towns in which the undertakings are in the hands of local authorities and the charges made by the London companies, as you will see in Table 11. May I call your attention before leaving

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Table 10 to the note at the bottom? "it is assumed "that houses of the gross estimated rental"—or the gross value, as the case may be; it is the same thing, but it is in one place termed gross estimated rental and in another place gross value—"it is assumed "that houses of the gross estimated rental of 35*l.* and "under will have one water-closet and no bath."

21,039. (*Mr. De Bock Porter.*) That is hardly the case in London now with new houses?—No, but in the old houses you will find it to be so to a very large extent. In order to put everything on one footing some assumption has had to be made, and this is the assumption which has appeared to be most reasonable. Even in the country now they are putting baths into houses of comparatively small rentals. Then houses of the gross estimated rental of from 36*l.* to 120*l.* are assumed to have two water-closets and one bath, above 120*l.* three water-closets and one bath. That assumption is made so that all are put on the same basis.

21,040. (*Chairman.*) In most of these corporations there is no extra charge, is there, for an extra water-closet at all?—Do you mean for the first water-closet?

21,041. No, for the extra ones?—Yes, in most of them; I can give you all the particulars; they are not detailed in the table.

21,042. No, heaven forbid?—But I am afraid you would find it rather bulky.

21,043. I do not want it in the least?—I did not intend to put them in.

21,044. I must take it that if there is a 37*l.* house that has three water-closets, the charge in your columns would be increased?—Yes, that would be so; so it would be throughout.

21,045. Table Number 11 gives the charges for the London water companies, does it?—Yes. The charge of each company is there compared with the average charge made by the 19 local authorities referred to in Table Number 10, as you will see in column 3. Then, in column 4 is the charge made by three London companies having similar charges, namely, the New River, the Grand Junction, and the Chelsea, and in the next column the difference between the two is shown. Where the charge made by the London companies is less than that of the average of the 19 authorities, the differences are printed in roman type; where the charges of the London water companies or of a London water company is higher than that average, the differences are printed in italics. You will only find three cases in which that occurs, namely, in columns 14, 17, and 20. You will find the average of the charges made by the 19 local authorities is repeated in the case of each company in columns 3, 6, 9, 12, 15, 18, and 21 to facilitate reference.

21,046. (*Mr. Lewis.*) Have you statements showing the average charges of the companies to compare with the average charges of the corporations?—No, I have not that information.

(*Mr. Lewis.*) That would have been very useful.

(*Mr. Pember.*) They are all lower than the average of the provincials, except those few charges that you see in italics. They are put in italics in order to show the few occasions on which any of the companies are higher.

(*Mr. Lewis.*) But that does not show the average of the London companies to compare with the average of the local authorities.

(*Mr. Pember.*) No, sir, but they must be lower.

(*Mr. Lewis.*) Still, one would have liked to have seen them side by side.

(*Mr. Pember.*) They must be lower, otherwise those italics would be very much more numerous.

(*Witness.*) Each company is compared with the average of the 19 local authorities. That was thought to be the fairest method of showing it, so that you might have each company's charges before you. You will see that in the case of the New River Company, the Grand Junction, the Chelsea, the West Middlesex, and the Kent, every one of their charges is below the corresponding charge made in the case of the average of the 19 local authorities.

21,047. (*Chairman.*) Let us take a particular case, because, I repeat, averages carry no weight whatever, to my mind. Let me take a 20*l.* house. In three of the companies the charge is 12*s.* 10*d.*?—Yes.

21,048. Whereas at Brighton it is 12*s.*?—Yes; and in Blackburn it is 1*l.* 5*s.* 7*d.*

21,049. It is higher in every one of these towns except Brighton?—Yes.

21,050. The next nearest is Birkenhead. Birkenhead seems also to be a cheap place for water. Why is that?—They obtain their water by pumping from wells, and I apprehend that the capital outlay has been small. Take any other rental. Take the first column; there you get the rent that the man pays in London. He lives in a house for which he pays, say, 30*l.*; he will pay for his water, in the case of the New River, the Grand Junction, and the Chelsea Companies, 19*s.* 2*d.*; but at Blackburn he will pay 1*l.* 18*s.* 4*d.*; at Bradford, 2*l.* 8*s.*; at Birmingham, 1*l.* 18*s.*; and at Birkenhead, 1*l.* 4*s.* 3*d.*; at Brighton, 18*s.*; at Bolton, 1*l.* 15*s.*; at Derby, 1*l.* 16*s.*; at Halifax, 2*l.* 0*s.* 5*d.*; at Huddersfield, 2*l.* 11*s.*; and at Hull, 1*l.* 10*s.*

21,051. We have got the table before us, and I do not think you need go through it. Of course, you have prepared a similar table, showing the cases where the local corporation charges are lower than those of the London companies?—No, we have taken these. I believe these are the whole. We did not select them. We took all those which had a population of 100,000 and upwards.

21,052. You mean that your Table No. 10 contains all the towns over 100,000 population that supply?—Except Stockton and Middlesbrough. There we obtained the information, and it was not discovered until too late to be rectified, that there was an element wanting which prevented us putting it into this table.

21,053. What was the element wanting?—I believe it was the rating of certain properties. The rating varies in different parts of the boroughs.

21,054. The rating varies?—Yes.

21,055. What do you mean?—The deduction from the gross value in order to get at the rateable value. It was thought that all the information had been obtained, but when it was at the last being worked out, that was found to be wanting, and there was not time to rectify it, but I may mention, that had that place been put in, it would rather have increased the average shown by this table.

21,056. Am I to take it that these are the only towns supplying their water by a public authority which have more than a hundred thousand population?—In England I believe without exception, except as I have mentioned. We did not take Scotland, because Scotland was thought to be under different conditions.

21,057. (*Mr. Pember.*) Have you taken the same towns that have been chosen by the County Council earlier in the evidence, by any chance?—There are a number of them, I believe, which also appear in the London County Council Return, if not all of them; but, I believe, in that Return the same pains have not been taken to bring them all to a common basis that have been taken here. It has been a very troublesome and arduous task, and has involved visiting the places in many cases, really to get at the bottom of the information required. I believe that this may be regarded now as perfectly accurate, and as showing fairly the sum which a man, in any one of those towns, would have to pay for his water if he lived in a house of any particular rental.

21,058. (*Chairman.*) In fact, as far as I can see from this table, it is the poorest districts in London that are the worst off; that is, the Lambeth, the Southwark and Vauxhall, and East London districts are the only three districts in which the charges are higher than the average of the other towns?—But you will observe that they are below the average of the provincial towns until you come to a rental above 25*l.* in the case of the Lambeth, and above 60*l.* in the case of the Southwark and Vauxhall, and in the case of the East London.

21,059. Yes, you are right?—So that the really poor class get their water cheaper than they do in the average of the 19 towns.

21,060. I suppose it is probably because there are so many of the poor class in those three districts that they are obliged to charge higher on the better class of house?—Probably.

21,061. (*Mr. De Bock Porter.*) I see you have charged nothing for high service in any house below 50*l.*, but there is a charge for high service, is there not, on a house of 50*l.* in the case of the Chelsea, the Grand Junction, and in the case of the West Middlesex?—

Yes, the first charge for a high service is on a house above the rateable value of 45*l.*, equivalent to a rental of 54*l.*

21,062. (*Mr. Pope.*) Which district?—That is in the New River, the Grand Junction, and the Chelsea districts. I think the honourable Commissioner mentioned one of these.

21,063. (*Mr. de Bock Porter.*) Yes. I am speaking of the Chelsea, and I am asking whether the table handed in at Question 4168 is incorrect as regards the high service?—I think that must be so from the return I have here, but a reference to the Act would very soon show it.

(*Chairman.*) Have you got the charge for high service?

(*Mr. de Bock Porter.*) "Where the annual value exceeds 30*l.*, but does not exceed 50*l.*, the charge is 4*s.* for the first and 2*s.* for each additional water-closet, bath, or high service. High service means the delivery of water at an elevation of more than 10 feet above the pavement in front of premises supplied."

(*Chairman.*) This refers to the Chelsea, the Grand Junction, the New River, and the West Middlesex.

(*Mr. de Bock Porter.*) The question is whether the table handed in at Question 4168 is wrong?

(*Witness.*) I do not know whether that has been altered.

(*Mr. Pope.*) Look at the Act of Parliament; that will recite what the existing charges are, and also whether that is correct or not. The Chelsea is one of the companies mentioned, and I have got the Chelsea Act before me, and we will see what the charges are according to the Chelsea Act.

(*Witness.*) Probably these three companies—the New River, the Grand Junction, and the Chelsea—are put together, and perhaps it is not so in the case of the other companies.

(*Mr. Balfour Browne.*) May I say that table is not one of our tables; it is one of the Commission's tables.

(*Chairman.*) Yes, I know. . . .

(*Mr. Pope.*) The section in the Chelsea Waterworks Act, 1852, is in these words: "Where the annual value of such house shall exceed 30*l.* and shall not exceed 50*l.*, a rate not exceeding 4*s.* per annum for each single water-closet, fixed bath, or high service, and a further sum of 2*s.* for each additional water-closet, fixed bath, or high service."

(*Mr. de Bock Porter.*) Then the high service does begin at 30*l.*?

(*Mr. Pope.*) It appears so.

(*Chairman.*) That applies to the New River, the Grand Junction, and the West Middlesex.

(*Mr. Pope.*) The table assumes they are the same in all those. I have referred to one of them which makes that statement correct.

(*Witness.*) I am reminded, my Lord, that the reason of it is this: The assumption at the bottom that a person in a house under 50*l.* value does not take a high service, although the company is entitled to charge for it if he did, but he does not require it in a house of a rental of less than 50*l.*

(*Mr. de Bock Porter.*) If the supply is 10 feet above the pavement, he has to pay it.

(*Witness.*) Yes.

(*Mr. Pope.*) Let us look what high service means.

(*Mr. de Bock Porter.*) Ten feet above the pavement.

(*Mr. Pope.*) I suppose that is what high service means. I have it—"Above the ground floor of the dwelling-house."

(*Mr. de Bock Porter.*) It is specified as 10 feet.

(*Mr. Pope.*) "Ten feet above the ground floor of the dwelling-house."

(*Mr. de Bock Porter.*) "Above the pavement" it says here.

(*Mr. Pope.*) That is not quite accurate. It is "10 feet above the ground floor of the dwelling-house." I am reading now the New River Company's Act, according to which it means "the delivery of water at any elevation more than 10 feet above the ground floor."

(*Witness.*) In the Grand Junction it is "Above the footway or pavement."

(*Mr. de Bock Porter.*) It is the pavement in some of them.

(*Witness.*) Yes.

21,064. So that 4*s.* should be added to those smaller cases over 30*l.*?—In those cases where they take the high service.

21,065. (*Mr. Pope.*) Where their supply is above 10 feet, you know?—Yes, but of course in many of those places, probably, they only have the water on the ground floor, and then it would not be above 10 feet. I have no doubt that is determined after inquiry by the officers of the companies as to what would be a fair basis to take.

(*Chairman.*) Taking your Table 11 in another point of view, I see, for instance, that for a house of the rateable value of 70*l.*, the Lambeth Company charge 5*l.* 16*s.* 6*d.*, whereas the West Middlesex only charge 3*l.* 9*s.* 4*d.*; can you at all justify that extraordinary difference in charge.

(*Mr. Pember.*) Of course, the West Middlesex are paying their 10 per cent., and they are giving a reduction, that makes it somewhat less.

21,066. (*Chairman.*) The reduction comes to very little at present?—I think the reduction is 10 per cent. or 15 per cent.

(*Mr. Pember.*) It was 15 per cent.

(*Mr. Balfour Browne.*) Would your Lordship ask if in West Middlesex that is the charge made with or without the rebate.

(*Mr. Pember.*) It is without the rebate.

(*Mr. Balfour Browne.*) I am asking Mr. Hawksley.

(*Witness.*) I think it is the charge made.

21,067. (*Chairman.*) Then that is the charge with the rebate?—Yes, with the deduction.

21,068. Never mind how the difference in price arises—whether it arises from the state of continuous prosperity and so on—how can you justify such a difference as that?—I do not know how it has arisen, but it has been justified before Parliament, and has received Parliamentary sanction. Really, to find the justification for those variations in rates, one must go back almost to the commencement of this history.

21,069. You see it never comes before Parliament, in the way of contrast, on a table like this. Parliament is in some way satisfied that it ought to allow Lambeth to charge so much, but it has not got the West Middlesex charges before it at that moment?—I should think it had, because, usually, when charges are being fixed, they are fixed in the face of opponents, who produce all that kind of evidence.

21,070. At any rate, you are not prepared to give me any justification of that difference of charge?—No, I cannot explain the differences in the charges. I have no doubt they have a justification, but am not acquainted with it.

21,071. (*Mr. de Bock Porter.*) It does not arise from any exceptional expense?—I do not know really what was the origin of it. One has to go through it from the origin of things. Originally this company drew its water straight from the river by a pipe put into the river, and a pumping station on the bank of the river. It had not even a service reservoir for a good many years, and I believe they paid about 130,000*l.* out of their profits, which they applied to capital purposes.

(*Mr. Balfour Browne.*) These charges were fixed in 1848 for the Lambeth, and in 1852 for the other companies.

(*Witness.*) I will give you an illustration of what happens in other places. Here are Bradford and Leeds, two neighbouring towns, where the water is in the hands of the corporations in both cases—practically the districts adjoin. In the case of a 70*l.* house in Bradford the charge for water is 5*l.* 15*s.*; in Leeds it is only 3*l.* 8*s.*

(*Mr. de Bock Porter.*) But the Lambeth and the Chelsea are drawing their water from the same source, and incurring the same expenditure for pumping and delivering to very nearly the same house, or to houses very near together, and yet there is such a difference in charge.

(*Mr. Pember.*) I think the honourable member might, perhaps, with advantage just wait until the

Mr. C.
Hawksley.
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Mr. C. Hawksley. Lambeth engineer goes into the box, because there is a great deal to be said about this.

(Chairman.) At any rate, Mr. Hawksley, has nothing to say about it?

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(Mr. Pember.) No, he says he has not.

21,072. *(Chairman.)* Looking at those differences of rate between the London companies, have you anything to say for or against charge by meter?—The objection to charge by meter is, first, that it is liable to induce an insufficient use of water among the poorer classes.

21,073. Is not that sufficiently met by starting your meter charge at a point which will abundantly satisfy the sanitary requirements of each house?—I was just going to explain that that might be met to a great extent, but then there is another—

21,074. You do not answer my question; my question is whether it is not met in that way—not whether it might be, but is not it met?—It is met in that way in some places, in Berlin, for instance.

21,075. Is not it sufficiently met in that way, is not the sanitary objection met by it?—I think it would be, but then there is another objection—a financial one—that the rent for the meters through which the water was supplied would come to more than the amount which the consumer now pays for his water, so that, in the case of the poorer classes, the payment they would have to make for water and meter together would be double, or more than double, what they now have to make for the water—

21,075a. The charge for meters is so high as that?—Yes, because not only is capital invested, but the meter has to be kept going in perpetuity, and there is all the cost of looking after it, and recording the index, and a great many expenses.

(Mr. Pember.) My Lord, I thought you might like just a few instances of what you yourself asked for, which I have been able to do while Mr. Hawksley has been talking. I have taken a 20l. house, a 40l. house, an 84l. house, a 180l. house, and a 300l. house, under column 1. I find that the average charge for a 20l. house in the country, that is to say, in all these municipalities, is 1l. 10s. 3d.; the average charge of the eight London water companies for such a house is 19s. 6d. Take the 40l. house, the average in the country is 3l. 0s. 5d., and the average charge of the eight water companies is 2l. 10s. 6d. I take the 84l. house; I find that the average charge in the country is 4l. 9s. 9d., and the average charge in London is 4l. 7s. 6d.—that is the nearest that London comes to it. For a 180l. house, the average charge in the country is 8l. 10s. 7d., and the average charge in London is 7l. 6s. 1d., more than 1l. difference. For a 300l. house, I find the average charge in the country is 14l. 18s. 9d., and in London, 14l. 1s. 9d. Of course, I have not been able to do the whole list, but I thought those were fairly tall tale instances of the way of it.

(Chairman.) Quite so, that is what one of my colleagues asked for.

(Mr. Pember.) If you would like to have the whole list done, it shall be done.

(Witness.) I do not know whether your Lordship is going to sit to-morrow.

(Chairman.) Yes.

(Witness.) I am afraid I am in some difficulty, as I have to sit as an arbitrator to-morrow at half-past ten. May I ask your Lordship what I am to do in that event? All the parties are coming up to London.

(Mr. Balfour Browne.) I may say, my Lord, that probably I would have to ask Mr. Hawksley some questions, but I am in the same difficulty; I am in that arbitration and my learned friend Mr. Freeman is on the other side.

(Chairman.) We must go on with somebody to-morrow morning. Of course, I will postpone the conclusion of Mr. Hawksley's examination to another date, although it is very inconvenient.

(Mr. Pope.) We shall have somebody else ready to go into the box to-morrow.

(Chairman.) There is nobody but Mr. Eaton, and he seems to me to say nothing except in agreement with Mr. Hawksley.

(Mr. Balfour Browne.) Mr. Eaton is in that arbitration, I am afraid.

(Chairman.) Whom have you got to-morrow?

(Mr. Hollams.) We had hoped to bring Sir William Crookes, but he cannot come for a week.

(Mr. Pope.) He is ill in bed.

(Chairman.) I do think it is not fair to the parties to have a meeting that is not a full day. It is a very unreasonable expense.

(Mr. Pember.) I am told the only witness we had on this part of the case was Mr. Eaton, and then after finishing Mr. Hawksley we should have gone to the chemists.

(Chairman.) I will not say the chemists are utterly irrelevant, but they are very nearly so. We have already got the finding of Lord Balfour's Commission, by which we mean to abide, about the Thames water.

(Mr. Pope.) Their evidence will be principally directed to the question of the necessity of excluding flood water.

(Mr. Balfour Browne.) That opens a very large question that, I think, strictly speaking, is going behind Lord Balfour's Commission. It is quite true they did not absolutely report it, but they certainly went on the supposition that it was never to go below the 200 million gallons, and excluding the floods and taking the 15 days' floods. We have not gone into it, thinking that it was really precluded, and, I hope, that they will not go very far into it, because if they do go into it with chemists, and that sort of thing, I am afraid we will have to ask to be heard on the same point.

(Chairman.) I suppose the Secretaries or Chairmen of the companies are coming at some time or other—cannot they come at once?

(Mr. Pope.) I can only say I am not furnished with any information on the subject.

(Chairman.) I should be very sorry to shut out evidence, but I must warn the companies, if they will not get their evidence ready we must proceed without it. We cannot wait for them for evidence. This inquiry has now been going on for 15 months or 18 months, and it is now months since it has been alleged, for instance, that the companies have overstated what was their capital account—they have so contradicted themselves in evidence as to what was requisite per diem per head, and so on—that all they say is utterly untrustworthy. These are things I should have thought you would have been eager to meet at the earliest possible moment. However, if there are no witnesses for to-morrow, we had better adjourn until next year.

[Adjourned till Monday, 16th January 1899.]

Recd
Q. 21

FORTY-THIRD DAY.

Monday, January 16th, 1899.

16 Jan. '99

Guildhall, Westminster, S.W.

PRESENT :

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
Sir JOHN EDWARD DORINGTON, Bart., M.P.
Sir GEORGE BARCLAY BRUCE, Kt., O.E.
ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
HENRY WILLIAM CRIFFS, Esq., Q.C.
ROBERT LEWIS, Esq.

OECIL OWEN, Esq., *Secretary*.

Mr. *Balfour Browne*, Q.C., and Mr. *Freeman*, Q.C., appeared as Counsel for the London County Council.
Mr. *Pope*, Q.C., and Mr. *Olaude Baggalay*, Q.C., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.
Mr. *Littler*, Q.C., and Mr. *Lewis Coward*, appeared as Counsel for the Kent Waterworks Company.
Mr. *Pember*, Q.C. appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir *Joseph Leese*, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. *Richards*, appeared as Counsel for the Chelsea Waterworks Company.
Lord *Robert Cecil* appeared as Counsel for the Hertfordshire County Council.
Sir *Richard Nicholson* appeared for the County Council of Middlesex.
Mr. *G. Prior Goldney* (Remembrancer) appeared for the Corporation of the City of London.

(*Mr. Pember*.) My Lord, one of your honourable colleagues asked me at our last meeting whether I could let him have the returns of the accounts of the water companies as late as possible. I am told that two of the companies, the Lambeth Company, and the West Middlesex Company, have sent in their own reports to their shareholders, and I rather gathered that the honourable Member wanted to have those as well; and I will undertake that two more, at all events, shall be furnished to him to-morrow of the accounts of the companies themselves. For the others, of course, I am not responsible, but I thought you might also like to have, in case you have not got them, the returns of the accounts made up as they are presented to the House of Commons, and, therefore, I have got one made on the 5th of May, 1897, and one made in 1898. I thought you might like to see those two. I am told that the New River, the Kent, and the Chelsea Companies have also sent in their own reports. If the honourable Member would like to have those as well, they are very much at his service.

(*Chairman*.) Thank you.

21,076. (*Mr. Balfour Browne*.) There are two formal documents that I have got to hand in on behalf of Mr. Gomme. They are returns by Mr. Gomme in answer to questions put by the Commission a very long time ago, I need scarcely say. Copies have been furnished to your secretary and to the water companies, but we desire to put them on the Notes with your Lordship's permission, and therefore I now hand them in. One is a "Statement showing generally the system of charge by the Corporations of the County Boroughs of England and Wales for water supplied beyond their municipal limits, with the comparison of the charge in the Borough and the Extra-Borough areas where the charge differs." That was asked for at Question 4392, and Mr. Gomme has got it out. Then the other is a "Table showing the scale of charges for water by the Corporations of the County Boroughs of England and Wales, and of Dundee, Edinburgh, and Glasgow, together with a comparison with the charges made by the water companies which formerly supplied the Boroughs." That was asked for at Question 3538.

(*The tables were handed in. See Appendix F, 3 and 4.*)

(*Mr. Pope*.) They have recently been sent to the secretaries of the Companies, but we have not had time to examine them.

(*Mr. Pember*.) Had not they better go on the Notes?

(*Mr. Balfour Browne*.) They have been supplied, but they ought to be on the Notes.

(*Mr. Pember*.) I think so.

(*Chairman*.) I have looked at those Tables, and I have been a little puzzled at this: in the table showing scale of charges the first page purports to give a list of boroughs where the charges have been reduced.

(*Mr. Balfour Browne*.) Yes, my Lord.

(*Chairman*.) On the other hand, I look at Birmingham, which is the third example in that column, and there I find that instead of being reduced, the charges have been increased, that the Corporation charges from 9½ to 5 per cent. on houses between 10l. and 50l., whereas the company charge from 9½ to 5 per cent. The next is houses from 50l. to 100l., and there the Corporation charges 6, while the Companies charge 5½.

(*Mr. Balfour Browne*.) That is because the Company's charge was upon the gross value and the Corporation's upon the net rateable value.

(*Chairman*.) You say that 6 per cent. on the net value is less than the 5½.

(*Mr. Balfour Browne*.) Yes, that is the explanation Mr. Gomme gives.

(*Mr. Pember*.) But I do not think that would do always, because I have found one, having had an opportunity of looking at them, but one on which I cannot of course lay my hand at the moment, where the Corporation charge on the gross value and the Company charge on the net, and still the Company is lower.

(*Chairman*.) That is Newport—that is the case. They are the same charges throughout; there is no reduction at all.

(*Mr. Pember*.) Take Ipswich, that looks rather like it again. The Corporation charge is a little lower, but then the Company charge apparently on the reduced rental, and the Corporation on the higher.

(*Mr. Balfour Browne*.) Those figures were given in answer to questions, I think they will explain themselves with that word of explanation. Since the last meeting we have received a letter from your Lordship's Secretary to this effect:—"I beg to inform you that the Chairman and Members of this Commission have appointed Colonel Rathborne, R.E., as Assistant Commissioner for the purpose of aiding them in their inquiry with reference to the estimated cost of the Welsh and Thames Schemes."

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(Chairman.) Yes.

(Mr. Balfour Browne.) We would like rather a little more direction from your Lordship before we deal with it. Is it your intention that Colonel Rathborne should hold an inquiry separately from this Commission, or that he should merely deal with the evidence that has already been given?

(Chairman.) We have had laid before us a vast number of conflicting estimates of the respective costs of the Welsh Scheme and the Thames Storage Scheme.

(Mr. Balfour Browne.) Yes.

(Chairman.) To criticise and compare those estimates is a task of infinite detail and considerable labour, and we intended to refer the examination of the different estimates to Colonel Rathborne, who will have before him Sir Alexander Binnie or any other witness that the London County Council may wish to call before him, and the witnesses who have given evidence for the Companies. Sitting round a table they will compare those estimates.

(Mr. H. W. Cripps.) May I ask, have we undertaken to do that with the approbation of those who have appointed us?

(Chairman.) Yes, certainly. You have been absent, Mr. Cripps.

(Mr. H. W. Cripps.) It is entirely a new matter to me.

(Mr. Pember.) Something very similar was done by Lord Balfour's Commission. I do not know whether they had special powers to do it or not.

(Mr. Balfour Browne.) Of course I have nothing to do with what goes on in the Commission itself, but all I want to say is that it seems to me that this really would be beginning the inquiry, so far as this particular matter is concerned, over again.

(Chairman.) Oh, no, we propose that Colonel Rathborne should take the evidence that has been given, and if he requires any explanations upon particular points, he might then ask questions of the person who has given the evidence; we do not propose that he shall take fresh evidence.

(Mr. Balfour Browne.) I am speaking with the greatest respect to the Commission, but I have a serious objection to that, and I will tell your Lordship why. The matter has now, to some extent, passed into an entirely new phase since this Commission was appointed. Our scheme for Welsh Water for London is now submitted to Parliament, and Parliament will have to determine whether that is a proper scheme for London or not; and I should deprecate very much Colonel Rathborne anticipating the action of Parliament by any report upon our Welsh Scheme. This Commission, of course, is entirely different; it was appointed of course before our Bills were in Parliament, and we have tried and are trying to lay all our views candidly before this Commission; but now, as to having another inquiry when our Bill is in Parliament, and when there is a Bill of the Companies seeking to affect the Thames supply, I think we should deprecate any such course very strongly indeed.

(Mr. Pope.) I do not know whether we have any such Bills.

(Mr. Balfour Browne.) I have read your Bill.

(Mr. Pope.) If we are entitled to speak on behalf of the water companies, we have not the slightest objection to the course suggested by the Commission.

(Mr. Balfour Browne.) I suggest not.

(Mr. Pope.) If not, it would be rather an unfavourable criticism on the County Council and not on the Companies.

(Mr. Balfour Browne.) I am quite prepared to lay our scheme before a Committee of Parliament, and I hope to persuade that Committee that it is a right scheme, but it is quite a novel thing, that when a Bill is pending in Parliament, that that should be prejudiced or furthered by a separate inquiry.

(Chairman.) But the inquiry before Parliament would not be in the least prejudiced by what we are doing. We shall have to make up our minds as well as we can on the varying estimates that have been put before us, and we have called in an expert to assist us in that inquiry. That is all we are doing.

(Mr. Pember.) That is all, and you might just as well say that the Commission should not report upon this point.

(Chairman.) Yes.

(Mr. Balfour Browne.) Forgive me. This Commission will report in conformity with the instructions it got, but it seems to me an entirely different matter to begin upon a new inquiry altogether.

(Chairman.) It is not a new inquiry at all. It is simply sifting the figures which have been laid before us, which are very conflicting and very embarrassing.

(Mr. Pember.) If you are not permitted to do that, may I be allowed to say that the London County Council, with reference to this Bill in Parliament, would be able to thwart all your labours.

(Mr. Balfour Browne.) That I do not agree with at all. And as I understand, of course, we have laid before you a large amount of evidence one way or the other.

(Chairman.) Yes.

(Mr. Balfour Browne.) If you are unable to make up your minds on that, then you have a right to private assistance.

(Chairman.) It is purely private assistance.

(Mr. Balfour Browne.) Then I do not think the London County Council would like to submit witnesses like Sir Alexander Binnie, as your Lordship suggests, for examination before Colonel Rathborne. *See 21,998.*

(Chairman.) The London County Council, of course, will take whatever course they think right.

(Mr. Balfour Browne.) That, my Lord, they will do, of course.

(Chairman.) Is Mr. Charles Hawksley here, because we had not quite finished with him.

Mr. C. Hawksley.

Mr. CHARLES HAWKSLEY recalled and further examined.

21,077. *(Mr. De Bock Porter.)* I want to ask you a question or two with reference to your Table 11 which you put in at Question 21,023, and which contains a comparison of the charges of the London Water Companies?—Perhaps I may shorten your inquiries by at once putting in an amended and extended table in order to meet the suggestions of the Commission.

(The witness handed in Table 12. See Appendix N, 12.)

(Witness.) The honourable Commissioner Mr. De Bock Porter, on the last occasion of my examination at Questions 21,061 to 21,065, called attention to the fact that the high service was charged at a lower rate than had been taken into account in the Table 11, then put in. The high service charges began at a lower point in the scale of rateable value or rental than had been taken into account in the preparation of that table. In order to meet that criticism the table has been amended, and you will find the note at the bottom shows that all houses having a gross value of 36*l.* and above (which is the first amount over 30*l.* gross value in this table) will have now a high service included. In all cases of the rateable value of 30*l.* and under the companies are not entitled to charge for a high service

with the single exception of the East London Company. From inquiries made of that company it would appear that there are very few high services given in practice to houses of 30*l.* or under, rateable value. In houses of that rateable value, the builders almost invariably arrange so to place the cisterns as to avoid the high service, which, in the case of East London, is 20 feet above the level of the pavement in front of the house, while in the other cases it is 10 feet only.

(Mr. De Bock Porter.) I see that the items to which I was going to call attention have all been corrected in this table which you have now put in.

21,077*a.* *(Mr. Pope.)* The new table is really to be taken in substitution for the old, is that so?—Yes, if you please.

21,078. In fact you desire to withdraw the one and put in the other in place of it?—If you please. Then another honourable Commissioner, Mr. Lewis, in Question 21,046, suggested that it would be exceedingly useful to the Commission if a comparison were made of the average of the charges made by the 19 local authorities referred to in Table 10 with the average of

the charges made by the eight London companies. That, my Lord, has been done, and you will find it in columns 21, 22, and 23, of the amended Table, that is Table 12, with this result, that in no instance, except the one single instance of houses having a rental value of 180*l.*, does the average of the eight London companies exceed the average charge of the 19 local authorities, and in that single instance the London charge is only one penny more per annum than the average of the charges made by the 19 local authorities. Then I was merely going to call attention to some footnotes which have been added with regard to certain other charges which two of the companies are entitled to make where the supply is delivered above a certain height above Trinity high-water mark. These charges only refer to a limited portion of their respective areas, and have not been taken into account, nor have the increased charges which the local authorities in many cases are entitled to make for supplies (differential charges for supplies) outside the limits of their borough been taken into account either, in Table No. 10. There were one or two clerical errors discovered, which have been corrected and the headings of some of the columns have been somewhat varied from the headings in Table 11 so as to make it, it is hoped, more clear. It does not alter the sense; it only, it is hoped, makes it more clear than it was originally.

21,079. (*Mr. De Bock Porter.*) As you have given such careful attention to the preparation of this table, may I ask whether you take any exception to the table that was put in at Question 4168?—I may say generally that I have not compared them.

21,080. The assumptions are different?—Yes.

21,081. But I assume that there is no inaccuracy in that table that has been put in?—Those are the London companies; those are the statutory charges, and in some cases the companies do not charge their full statutory charges, in respect to some of the extras; and in the case of the West Middlesex Company, as you are aware, there is a rebate of 10 per cent. over the whole of their charges which, I take it, this table would not take into account as it professes to be a statement of the statutory charges.

21,082. Yes, as applied to certain cases; but I think when we were speaking the other day about differential rates, you said that they were to be justified where there were material differences in the case of manipulating the water, pumping, and what not?—I did not express any opinion as to the justification, in fact I think I expressly said I was not aware of the circumstances which justified them, but that no doubt all those circumstances were thoroughly gone into by Parliament at the time when the several rates were authorised.

21,083. But in the early days, was it not the practice for the company to make an agreement with the consumer and charge only at the second stage?—I think that is going very far back in the history.

21,084. Then when they came to the rateable value it was contended that the rates which they were then getting were to be maximum rates, but they have practically been minimum rates, have they not?—I am afraid I do not quite follow that. The introduction of rateable value, as you are aware, is a matter of recent legislation. There was an Act passed defining what was the meaning of annual value, in consequence of the decision in *Dobbs's* case.

21,085. Yes; but I mean before that, when the companies went to Parliament for this method of assessing on value, was not it alleged that the rates which they were getting then were to be maximum rates?

(*Mr. Pember.*) No.

(*Witness.*) I am afraid I am very stupid, but I do not quite follow that; the rates which they were authorised to charge were defined by Parliament, I think, in many cases in the year 1852, and in some cases earlier than that.

(*Mr. Pope.*) I think what you are referring to, sir, is a discussion which took place at that time which we have been in the habit of talking about as *Serjeant Wrangham's* discussion.

(*Mr. De Bock Porter.*) Yes. It was alleged then that they would be maximum rates.

(*Mr. Pember.*) That is before the rates were amended.

(*Mr. Pope.*) At one period of the discussion it was, undoubtedly, so alleged. Then Parliament made a

difference between the rates which were allowed as maximum charges, and they no longer remained under that obligation, but there was such a discussion.

(*Witness.*) I take it that the rates in an Act of Parliament are always the maximum rates, unless otherwise specified.

21,086. (*Mr. Pope.*) Yes, but what *Mr. Porter* asks is whether there was not an assurance given to the public that they would not be exacted to the full?—That the charge would not be exacted.

21,087. (*Mr. De Bock Porter.*) That is so, is it not, as regards the New River—the New River Company does not exact its utmost rates from certain premises in the City, banks and places of very considerable value—they do not charge the full statutory charge?—That may be so, but I am not competent to answer that.

21,088. That has been given in evidence?—You will have, no doubt, the Secretary of the Company before you, who will be able to inform you fully as to that.

21,089. But I wanted to ask your opinion with reference to the very wide difference there is between the charges of the Chelsea, the Grand Junction, the New River and West Middlesex, and the Kent and Lambeth Companies. In that table, to which I have called your attention, you will see that on a 30*l.* house the charge of the Lambeth Company is three times as large as others, and I wanted just to point to *Lass's* tables with reference to the total cost to the Company. I see in the averages which are there given of the relative costs of the different companies, that the Lambeth Company is not by any means one of the most expensive; in fact it is the third from the bottom in that list?—I think you will find that, notwithstanding the rates they are authorised to charge, the amount they get per thousand gallons for their water does not much exceed those of the other companies.

21,090. But I am taking their total charges for maintenance and management. They are stated in *Lass's* tables, in the last edition, to be 38 per cent. on as against 42, of the Southwark and Vauxhall, and as against 48 of the Grand Junction, and yet those charges of the Lambeth Company are three times as much as the others?—But what I think we must look at is, what property of the kind they supply brings them in in revenue, and if you would kindly turn to page 10 of *Lass's* tables you will find that the income of the Lambeth Company per thousand gallons of water supplied is only 7*4d.* per thousand gallons, as against the average of the whole of the eight companies, of just 7*d.*

(*Mr. Balfour Browne.*) That is comparing the average.

(*Mr. Pember.*) Might I venture to ask what page you are on?

21,091. (*Mr. De Bock Porter.*) My quotation is on page 12 of the new edition. I am taking the total cost for maintenance and management. It there appears that the Lambeth Company is the lowest but two. It is 38*60*; the costs of the New River are very much higher, and also the Grand Junction, and yet the charges to the consumer are so very much less?—It would appear from that that the value of the property which they supply is of a much lower order than that of the property supplied by the New River Company.

(*Mr. Pember.*) Lambeth, of course, is a very poor district, remember.

21,092. (*Sir John Dorington.*) So that per *£.* of rateable value they are supplying a great deal more water?—Yes. It is necessary to look at that, and I may illustrate it by the case of Brighton, which was referred to on the occasion of my last examination. There, notwithstanding the very low charges which will be seen from Table 10 are made by Brighton, Brighton receives 8*d.* per thousand gallons for the water which it supplies as against 7*d.* received as the average of the eight London companies.

21,093. (*Mr. Balfour Browne.*) It is not fair to take an average. Some of the London companies are supplying as low as 4*9d.* per thousand gallons; that is the Southwark and Vauxhall?—Yes.

21,094. And the East London as low as 5*16d.*?—Yes, and that is notwithstanding their higher rates of charge.

(*Mr. Pember.*) Where are you reading from, *Mr. Balfour Browne*, may I ask?

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Mr. C. Hawksley. (Mr. Balfour Browne.) I do not know, I have not got the book before me, I am only reading from a quotation.

16 Jan. '99 (Mr. Pope.) From your notes ?

(Mr. Balfour Browne.) Yes.

(Witness.) The East London only gets 5·2d. per thousand gallons.

(Mr. Pember.) That must be dependent very largely on waste. If you have a population that wastes half the water you send down to them, of course you will get very much less per million gallons.

(Mr. Balfour Browne.) I entirely agree.

(Witness.) But it depends not only on that, but very largely on the class of property which they supply.

(Mr. Pember.) Yes.

(Witness.) For instance, as much water is supplied probably to a house having an annual value of only 20*l.* as in another district is supplied to a house having an annual value of double or three times that.

21,095. (Mr. Pember.) Supposing they wash at home ?—Yes ; and you have to look at the number of people living in a house.

21,096. Two or three families sometimes ?—Yes.

(Mr. H. W. Cripps.) May I ask, Mr. Balfour Browne, have you communicated with, or have your clients communicated with, these 19 water corporations to agree.

(Mr. Balfour Browne.) No, and I hope in cross-examination to show that the Table No. 10, upon which the 19 corporations is founded, is exceedingly fallacious. I hope to succeed in showing that to Mr. Hawksley.

(Mr. H. W. Cripps.) It takes a very long time to show that.

(Sir George Bruce.) Of course the fair thing would have been that you should have agreed upon the sum, not that you should ask Mr. Hawksley.

(Mr. Balfour Browne.) Mr. Hawksley told you the other day that he had left out two that we relied upon very largely—Edinburgh and Glasgow. I do not know why.

(Witness.) They are not in England, and I understood it was the desire of the Commission to confine themselves to that.

(Mr. H. W. Cripps.) I only want to know whether it is 19 taken by the one side or 19 taken by consent.

(Mr. Balfour Browne.) Taken by them—not with our consent.

(Witness.) May I remark once more that in that Table 10 every place in this country—in England—having more than 100,000 inhabitants has been taken, with the single exception of Stockton and Middlesbrough, which were omitted for the reason that I mentioned, namely, that some of the information at the last moment was found to be wanting, and if that had been included, it would have raised the average charges slightly of the corporate towns.

21,097. (Mr. Pember.) We may be wrong, but we thought that these towns were taken from the table put in by Mr. Gomme at Question 3538 ?—We took them independently, but I think they do not differ from them very far, but they were taken quite independently. We took every town above 100,000 population in England.

21,098. Over 100,000 population—that is what we went upon ?—Yes, in England. Before continuing my examination, my Lord, with reference to that diagram which you had some difficulty in following on the last occasion, because there appeared to be three colours when there were only two, owing to the hatched lines sometimes being upon a coloured ground and at other times on a white ground, may I say I have had a margin explanation added to make it more clear (handing in diagram).

21,099. (Mr. Pope.) That is a substituted diagram for one that is put in ?—Yes, but merely having a colour.

21,100. (Chairman.) It is substituted for the diagram you put in at Question 20,764 ?—Yes, and I think that it will be more clear than the other. I have added that blue colour and the orange colour to make it clearer. There has been no other alteration but the addition of that streak of colour.

21,101. (Chairman.) I understand it is in substitution for the other ?—It is not altered in the least degree.

21,102. No, but it is differently coloured ?—Yes.

21,103. It is in substitution for the other ?—Yes, but the facts remain the same. Then I gathered from your Lordship on the last occasion that you would like a statement showing in how many of the 19 corporate towns the charges at each particular value were higher or lower than those made by the London companies.

21,104. Yes ?—A table has, therefore, been prepared, in which you will find in column 5 the number of the towns in which the corporate charges are higher than those of the average of the eight London companies. In column 6 you will find the number of cases in which they are the same as those of the London companies, and in column 7 the number of places in which the charges in the corporate towns are less than those of the average.

(The Witness handed in Table 13. See Appendix N, 13.)

21,105. These are merely the results of Table No. 12 ?—Yes, Tables 10 and 12. Mr. Pember made a calculation of some of them on the last occasion.

21,106. (Mr. Pember.) Yes, I did. This is that incipient calculation finished ?—Yes.

(Chairman.) Your incipient calculation, Mr. Pember, was of averages, was it not ?

(Mr. Pember.) That was another one altogether, my Lord.

21,107. (Chairman.) Now, to conclude your evidence, Mr. Hawksley, will you give us your view about the proper figure to take for the gallons per head that the London supply will require ?—I will venture to do that. I think that if the same means are followed for the prevention of waste as have been carried on with great success for many years past in the Provinces, that the London companies will be enabled to reduce their supply to 25 gallons per head per diem, or thereabouts. Of course, it will take time.

(Mr. De Bock Porter.) How is it to be done ?

21,108. (Chairman.) In point of fact, a much larger quantity per head is now actually supplied ?—It is.

21,109. Then how do you account for that ? How do you reconcile that, with your view that 25 gallons per head, is enough ?—I attribute it in part to the attention of the companies having been hitherto mainly absorbed in the extension of the system of constant supply. That may be said now to be completed, and it is only right to believe that the companies will now turn their attention more to the suppression of waste.

21,110. Is it the tendency of the introduction of constant supply to increase the number of gallons per head ?—In the first instance it is, until the whole of the fittings can be put in proper order. It is not customary to go round and condemn all existing fittings, but the change is made gradually as waste is discovered and the parties are called upon to substitute efficient fittings for that which is defective.

21,111. The companies have now the power to do that, have not they ?—They have, but the period has not yet arrived when the advantage of the power is fully developed, that is to say, they have not, and very properly so, called upon every one before they give them a constant supply to change all their fittings to those adapted to a constant supply, but they have said, when these fittings are shown to be wasteful, we shall call upon you to change them.

21,112. Then, it is merely a question of the fittings that you say alters the sufficient supply of 25 gallons per head, to a supply of as much as 40 gallons a head, in the case of the Lambeth Company ?—Or a supply where the fittings have been inefficient of as much as 120 gallons per head, which I think was the quantity supplied at one time in Dublin, and, I think, in Oxford at one time, it reached 80 or 100 gallons per head, till proper regulations and fittings were introduced.

21,113. But are the regulations at present in force sufficient to reduce that amount of waste ?—In my opinion they are, though they would admit of some amendment to bring them up to the most recent times.

21,114. Then it is the fault of the companies, or, I will not say fault, because I do not want to use a word of censure, but it is the result of the inaction of the companies that the waste has not been prevented already ?—I do not wish to go so far as that already, because I think it is a natural consequence. It always happens that on the first change from the intermittent

system to the system of constant supply, the quantity of water used rises per head per diem.

21,115. But you say that is not a permanent increase?—That is not a permanent increase, and I do not see at all why it should not be reduced in London, as it has been so successfully reduced in many of the provincial towns.

21,116. For instance, has a provincial town's supply first risen, and then been reduced after the introduction of constant supply?—I was going to give you Norwich, but there, I think, they began with the constant supply but without proper attention to fittings. There it rose to 40 gallons per head per diem, and the company were unable to maintain a constant supply, so great was the demand on them, but after the introduction of proper fittings it was reduced to something like 16 gallons per head per diem, everybody having a constant supply and able to take as much water as they required for use.

21,117. Then how long did it take in the case of Norwich to reduce the consumption to that extent?—I should hardly like to answer that question over positively.

21,118. Then say you do not know, if you cannot answer?—I should think it was 6 or 7 years.

21,119. What was the reduction in Oxford? You said that was one of the cases where the consumption had become very high after constant supply?—There the reduction, I believe, is about 20 gallons, but I am speaking now without any exact knowledge on the subject.

21,120. (Mr. Pember.) Down to 20 gallons?—Down to 20 gallons or thereabouts, but I am speaking without positive knowledge.

21,121. (Chairman.) Down to 20 gallons from how much?—From about 80. Then there is the case of Sheffield. That was a case of change from the intermittent to the constant supply. There the supply was 39 gallons per head per diem when the constant supply was first introduced; it rose to 39 gallons per head, and was subsequently reduced to about 17.

21,122. (Major-General Scott.) Was not the evidence of the engineer of the East London Company before Lord Balfour's Commission to the effect that the company had been struggling for a considerable time in the endeavour to reduce waste in East London, and that not altogether successfully?—I believe evidence was given to that effect, but I am still of opinion that success may be obtained. I know that in the East London district they have to deal with a population which steals the fittings. They wrench them off; anything that they can turn into money, in some parts of the East London district, the inhabitants do turn into money, regardless of the consequences.

21,123. (Mr. Mellor.) Do you think there has been any amount of that—I mean so as to make it a serious matter—the stealing of fittings?—I believe it does amount to a serious consideration.

21,124. You think it does?—Yes, but Mr. Bryan will be able to tell you more in detail about that than I can do. But still, when that is taken into account and applied to the whole of London, I do not think it will affect the conclusion I have arrived at that 25 gallons ought now to be sufficient.

21,125. (Chairman.) At any rate, hitherto, there has been no appearance of decrease in the supply per head in London?—There has been some, I think. For instance, in the last five years the supply has remained steady.

21,126. That is not a decrease, you know?—But during that period the constant supply has been introduced, and naturally the quantity supplied would have risen had not it been counterbalanced by a decrease in another direction.

21,127. You say since 1893?—In 1893 the average supply was about 35½ gallons per head per diem, it was the same in 1897.

21,128. In 1898 it somewhat rose?—In the case of the East London there was an actual decrease of 4½ gallons between those two years.

21,129. Four and a quarter gallons per head?—Yes; in the other cases there was an increase more or less variable.

21,130. In those calculations of the numbers of gallons per head, is the metered water included?—No; we have been speaking of the whole. But I wish to draw your

particular attention to this, that when considering the management in any particular place the metered water should be deducted.

21,131. Exactly, and that is why I asked you whether in the figures we have had laid before us of the number of gallons per head supplied by the London companies metered water is included?—Yes.

21,132. Then why do you not say, yes—it is so short?—I had not quite followed your question.

21,133. Very well then, you say metered water ought to be deducted in order to estimate the requirements of domestic consumption per head?—Yes.

21,134. I am afraid we have no means of making that deduction if that were so—we have no figures before us to enable us to do it?—The metered water supplied in London by the London companies is somewhere, I believe, between six and seven gallons per head per diem.

(Mr. Pember.) It has been given at about seven at an earlier stage.

(Witness.) In the year 1891 we took it out, and found it was 6½ gallons.

21,135. (Chairman.) Supposing you made that deduction from all the figures that we have had laid before us, that still leaves a rise in the amount required for domestic supply?—Yes, due to waste.

21,136. It is only a uniform deduction to be made all through?—And that is largely due to waste. What I wish to point out is, that the domestic supply alone ought to be reduced to about 18 gallons per head per diem.

21,137. Does your estimate of 25 gallons per head per diem being sufficient include the metered water?—It does; and, therefore, if you deduct seven from that, it leaves you with 18.

21,138. I do not really quite see what the value of this deduction of metered water is; it is only deducting the one sum from all the rising figures?—It is very necessary for this reason. Take the case of Bradford; in Bradford the apparent quantity of water supplied is nearly 40 gallons per head per diem, but out of that, 19 is supplied by meter, and, therefore, the non-metered water is reduced to 21½ gallons per head per diem. Take again the case of Manchester. There, out of 34 gallons per head per diem 17 are supplied by meter, reducing, therefore, the non-metered or domestic and waste to 17 gallons per head per diem.

(Mr. Pember.) You see his point is, my Lord, if I may venture to say so, that the water consumed for domestic purposes ought to be pretty much alike over the country if there is none wasted and enough given.

(Witness.) That is so.

(Mr. Mellor.) It is non-metered, as I understand?

(Mr. Pember.) Non-metered.

(Chairman.) But the metered water must be supplied as well as the non-metered water.

(Mr. Pember.) Then the metered water supply differs according to the necessities.

(Chairman.) Yes, according to the necessities of the place, and in a place like Bradford you say that 19 out of what?—I forgot your figure.

(Witness.) In Bradford they supply 19 gallons by meter.

21,139. Yes, out of—what is the total?—Out of nearly 41.

21,140. Very well, 19 out of 41 in Bradford, and 7 or 6½ out of a quantity varying from 30 to 40 in London?—Yes.

21,141. Still, that supply must be given, whether it is metered or non-metered?—Clearly.

(Mr. Pember.) He wants to ascertain whether there is any waste or misuse of the water, and he says, if I find London at the present moment using 28 gallons per head for domestic use, and I find these other towns using 17 or 18, I think there is 10 gallons too much used in London, and if they have got enough, that might be reduced by proper appliances for the reduction of waste.

(Witness.) Just so.

21,142. (Chairman.) Of course, there is no waste in the metered water?—No, none.

21,143. A man pays for all he takes?—Yes.

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Hawksley.

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Hawksley.
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21,144. (*Mr. Mellor.*) And then he looks after the fittings, I suppose, if he has to pay for all he takes?—Yes. It is immaterial to the supplier whether he does or not, but I should think he takes very good care to look after his fittings and not to waste any.

21,145. For his own sake?—Yes. In Stockton and Middlesbrough, for instance, which has been referred to, the supply for trade purposes amounts to nearly 40 gallons per head per diem actually supplied by meter.

21,146. (*Mr. Lewis.*) I suppose there is a waste in connexion with metered water, only it is not so great, because it is to the interest of the people to see that it is reduced as much as possible—there surely is waste?—If it is wasted, it is wasted at the expense of the consumer, whereas in the case of the domestic water, if it is wasted it is wasted at the expense of the water supplier.

21,147. (*Sir John Dorington.*) At Middlesbrough, you say, the trade purposes are 40 gallons. What is the total consumption for all purposes?—I have not the figures at the present time. I am speaking of the time when I was connected with the supply.

21,148. (*Mr. Pope.*) Would you mind answering the question of the Honourable Commissioner—what is the total consumption, domestic and trade, of Stockton and Middlesbrough?—I have not the figures.

(*Chairman.*) Why do you not say you do not know, Mr. Hawksley—do give us a short answer if you can.

(*Witness.*) I have not the figures.

21,149. One of the Commissioners asked what was the total consumption. If you do not know, say so?—I do not know.

21,150. Then there is the answer. Can you give us the figures for Manchester?—Yes, I have got the total consumption for Manchester, which is 34½ gallons.

21,151. How much of that is metered water?—17½.

21,152. Leaving for domestic?—17.

21,152a. (*Mr. Mellor.*) That is about half, then?—Yes.

(*Mr. Pember.*) That compares with the London 28.

(*Witness.*) I have here a list of 15 towns, and the average of the supply in those 15 towns is 28½ gallons per head per diem, of which the metered water is 10½, leaving the domestic supply at just a little over 18—call it 18½.

(*Mr. Pember.*) That would be a useful table.

21,153. (*Chairman.*) Yes. Will you hand that in?—Yes.

(*Witness handed in Table 14. See Appendix N, 14.*)

21,154. (*Chairman.*) These are selected towns, of course?—Yes, but they are all large places.

(*Mr. Pember.*) What are the names of them?

(*Chairman.*) Birmingham, Bradford, Bristol, Cambridge, Derby, Devonport, Huddersfield, Leeds, Leicester, Liverpool, Manchester, Newcastle and Gateshead, Rochdale, Sheffield, and Southport.

21,155. (*Mr. Pember.*) Did you select them on any principle?—They are large towns in which the management is fairly good. Of course, you may select other places where the management is bad.

21,156. (*Chairman.*) Are these towns supplied by corporations or by companies?—There are 10 supplied by corporations and five by companies.

21,157. You would suggest, I suppose, that in all these 15 towns the corporation or the company have contrived to reduce waste to a minimum?—Yes.

21,158. Why have not the London water companies done the same?—Because in the old days they supplied on the intermittent system, and therefore relied on the shutting off of the water to prevent waste.

21,159. But those are very old days; there have been plenty of years elapse since the constant system?—They have only just completed or are really completing its introduction at the present moment.

(*Mr. Pope.*) I understand that, at present, Mr. Hawksley's argument is to be that sufficient time has not elapsed to enable the companies to do what they will do—so I understand his argument.

(*Chairman.*) That is what he says.

(*Mr. Pember.*) I think there is another reason—the companies were unpopular, and they were really afraid to put any pressure upon their consumers—they did not want to make matters worse.

(*Chairman.*) Might there not be the reason that we have had suggested to us—namely, that the companies found it cheaper to pump more water than to remedy the causes of waste arising in their own system?

(*Mr. Balfour Browne.*) They said so, my Lord.

(*Witness.*) That was the belief of one of the companies only, and now they do not believe that any longer.

21,160. (*Major-General Scott.*) Have you made any calculation of the increase of net revenue which would result from the saving of 10 gallons per head in the present supply of London?—I have not.

21,161. That is what your evidence is pointing to, I suppose—that there would be an increase in the net revenue, and therefore purchase would be a greater financial success—is that so?—That is one of the results, but it was not directed to that particular point.

21,162. It was not directed to that?—No.

21,163. Still, is that a deduction that could be drawn?—Certainly.

21,164. (*Chairman.*) How long do you think it would take to cut down the demand upon the water companies from the present varying figure, which runs up to 40 gallons per head per day, down to your 25 gallons?—I think that the first five gallons could be taken off in five years. Probably it would take to get the remainder down six or seven or eight years, perhaps. It is more difficult to get the last gallon off than it is the earlier quantity.

21,165. I suppose you intend us to infer from all this that there is there a source of prospective income?—I was not directing myself towards income, but towards the quantity of water that really had to be provided.

21,166. But it would have that effect?—Yes, it would have that effect, but what I wanted to show was that, it having been stated that 40 gallons ought to be provided, the 35 gallons found by Lord Balfour's Commission to be sufficient, was sufficient even to provide for that gradual increase which is taking place in the legitimate consumption of water for domestic purposes.

21,167. In these 15 towns that you have given us, are baths common?—In all places they are becoming more common; they are not very common anywhere, I think, now, but they are being introduced into a class of property where formerly they did not exist.

21,168. I think now we have exhausted that subject of the waste and supply per head. Have you any suggestions to make to us on the subject of control?—I think that in London certainly control is provided for and exercised which does not exist elsewhere in this country. There is a Water Examiner, and there is a Government Auditor, and there are no such means of control in any other parts of the country.

21,169. Has the Water Examiner got powers enough, in your judgment?—There seems to be some doubt as to whether he has a power of entry on the premises of water companies.

21,170. (*Mr. H. W. Cripps.*) Would you suggest any additional control—we know what control there is at present—it is by Act of Parliament. Is there anything you can suggest in addition to that control which the Act of Parliament provides?—I was only going to suggest that if the Water Examiner has not the power of entry on to the works of the companies, the companies should accord it to him—not merely by grace, but that they should give him an express authority to do so.

21,171. Is that all?—That is all—for this reason, the responsibility of giving the supply ought to rest on those on whom Parliament has placed the responsibility. Now, if a divided responsibility is introduced, who is to really bear the responsibility in case of anything going wrong or any deficiency? On the other hand, one body cannot be expected to provide the money for works.

21,172. I see you direct your answer to me, but the only question I asked you was whether you had any additional control to suggest beyond what exists already by Act of Parliament?—Yes.

21,173. You have told me what that was, that the Water Examiner should have more power?—And I was endeavouring to explain—

21,174. I do not want to argue it any further?—Why I considered it was not necessary and would be undesirable.

21,175. Then your answer is, that you have no additional control to suggest?—No; and further, that I think any additional control would be undesirable.

21,176. (*Sir John Derington.*) No public authority has any control over the finances of the companies as to whether they are spending money properly or not?—There is the Government Auditor.

21,177. (*Chairman.*) He only checks the proper application of different sums either to capital or to revenue?—That is as far, I venture to think, as he ought to go.

21,178. Wait a minute. It is suggested by a large body of opinion that the water supplier of London ought to go to Wales as a source of supply?—Yes.

21,179. There is no authority at present in existence that can decide that question for or against the view of the water companies?—Parliament will decide it.

21,180. You say no control of that sort is needed?—Certainly not; in fact, it would be impracticable.

21,181. I asked you a question the other day—I do not know whether you have any view to give upon it now—namely, what will be the cost of splitting up the undertakings of the water companies between the seven (I think there are) metropolitan counties, that is to say, the county of London and the surrounding counties?—I have no idea on the subject at all. It would be a very long matter to go into.

21,182. (*Mr. Mellor.*) Do you think it would be a considerable cost?—I think there must be a considerable cost, but I do not know what at all.

21,183. (*Major-General Scott.*) There is one thing I should like to ask you a question about, and it is this: Are you aware that a Bill is being promoted by the London water companies for the purpose of arranging for inter-communication of their systems in order to meet emergencies?—I have heard something of it. I have never seen the Bill.

21,184. You have not?—No.

21,185. You cannot answer any question as to the details of the Bill?—No, I have never even seen a print of it.

21,186. (*Chairman.*) To conclude your evidence, I gather that you do not see any advantage resulting either to the water consumer or to the ratepayer, by transferring the undertakings of the companies to some public body?—I do not; in fact, there would be a positive disadvantage, because it would result in the ratepayer of the present day having to provide water for the ratepayer of the future.

21,187. Do you mean because he would have to provide a sinking fund?—He will have to provide a sinking fund.

21,188. (*Mr. De Bock Porter.*) Has not that been the case with every municipality that has dealt with the water undertaking?—And in my own view it is a hardship on the ratepayer of the present time.

21,189. In the long run, surely it is advantageous—you would not advocate the retention of the private undertakings, would you—you would not advocate municipalities not taking them over, and the continuance of private undertakings supplying water?—Certainly, I think it is better to have a private undertaking to supply the water, and the municipality to look after the controllers of the private undertaking.

21,190. Have you advised the municipalities who have consulted you not to touch the undertaking, but to leave it in the hands of the commercial company?—They have not often consulted me on that point.

21,191. It has got beyond that before it came to you?—Yes. I have more generally acted for the company, and been connected probably with the company before it was taken over by the corporation.

21,192. (*Mr. Lewis.*) Would your views on that subject be modified if a sinking fund were dispensed with?—To the extent of the sinking fund.

21,193. Suppose the charge was perpetually recurring and there was no sinking fund, would that alter your view?—It would only modify it to the extent of the sinking fund. I am still of opinion that the interests of the public are better served by a well-managed company, looked after as they always are by the local authority, than they are by the local authority themselves, who have no one to look after them.

21,194. Would not the position be greatly improved if the companies were to amalgamate into one strong body?—In London?

21,195. Yes?—It might be to some extent, but the companies are each of them so large that I do not think it would result in any very great advantage.

21,196. (*Mr. De Bock Porter.*) Take the instance of a company like the West Middlesex, that has reached its maximum dividend, and therefore could have no possible interest in carrying on this undertaking, beyond assuring that dividend. Is not that the sort of management likely to be lax in regard to expenses?—I do not think so, because one always finds, even where companies are paying their maximum dividends, that there is a very great disinclination to spend capital on the part of directors until it is really necessary to do so.

21,197. But they have not that keen interest in the management of the undertaking which they would have if there was any more to be had or any saving to be made?—I think it does not make much difference. That has been my own experience. I have not found them become lax in the management.

21,198. (*Mr. Lewis.*) I suppose that depends very much upon the character of the board of direction?—Yes, of course it would.

21,199. A high class board would look well after a concern—

(*Mr. Pember.*) According to that, you would never get any good work out of anybody who was paid a limited income.

21,200. (*Chairman.*) If the purchasing public body pay a fair price for the undertaking, I do not quite see why it should not pay its way in their own hands as well as in the hands of the company. Except the sinking fund, what circumstance of disadvantage is there?—Do you mean in the management?

21,201. In any respect. Suppose the purchase by a public body, which is exempt from a sinking fund, as has been suggested to you, why should not an undertaking pay which is still in the hands of a public body, not of a private company?—If the private company were at the time of purchase not earning its maximum dividend, then the purchasing body would have to buy the prospective value, and would be buying a deferred annuity, and until that was realised, of course, to that extent, the municipality would have to bear the loss; after that had become realised, then they would be, as regards profits, on the same footing as the company.

21,202. You say that if the arbitration is fair, the purchaser must pay the present value of the prospective income of the company?—Certainly.

21,203. And that present value will cost them something until it comes into existence?—Yes.

21,204. (*Mr. Mellor.*) That is more than the market price, is it not?—Usually it is more than the market price, because the market price does not generally take into account the full value of the undertaking.

21,205. (*Chairman.*) We have been told by witnesses who have come before us that the market price includes prospective value and back dividends?—Usually the ordinary purchaser is unable to estimate those things at their real value.

21,206. Of course, they are very difficult to estimate. But does he not pay something more than he would if he had not got the chance of back dividends and of prospective increase of income?—He does, but usually not enough.

21,207. You say the market value is a little below what those are really worth?—Yes.

21,208. What an arbitrator would give for them?—He takes his chance, and therefore he buys, hoping to obtain something more than the equivalent of the price he gives.

21,209. You say the market value does represent what the purchaser hopes he will get, both in the shape of back dividends and in the shape of prospective increase of income, but he estimates the hope a little less than the reality?—Yes.

21,210. A little less than an arbitrator would give?—Sometimes considerably less.

21,211. Sometimes, perhaps, more?—Occasionally more. I know a case now where he estimated it more

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Mr. C. Hawksley. than was justified by the award when the undertaking was transferred.

16 Jan. '99 (*Chairman.*) That might be from various reasons.

(*Mr. Pember.*) I do not suppose the Stock Exchange looks very far ahead.

(*Witness.*) They have not the means of closely estimating these prospective advantages. It requires a long investigation.

21,212. (*Major-General Scott.*) I should like to direct your attention to Question 15,012. There, Mr. Pope, the learned Counsel for the companies, in addressing the Chairman, refers to the provisions of a Bill which the companies propose to introduce. You will see that the provisions which the Bill was to contain were the following:—“(1) The companies forthwith to consider what works are required for the above objects, and to submit proposals to the Local Government Board for approval”—the objects were the inter-connexion of the companies' works—“The Local Government Board to be empowered to approve and authorise such works with or without modifications or to authorise and order other works for the like objects. (2) Further works for the above objects may in like manner be from time to time authorised, and ordered, if, and when required. (3) The respective companies to carry out, in their respective districts, all works so authorised. (4) The Local Government Board to be empowered to authorise the supply of surplus water from the works of any company to the works of any other company for the time being requiring the same, and the Local Government Board to have power in case of emergency to authorise any of the companies to take more water from the Thames than they are now authorised to take.” With reference to your observations as to the sufficiency of the present control and the inutility or inadvisability of introducing further measures of control, do you not think that these provisions which are proposed by the companies themselves do introduce a further measure of control?—That is only in regard to this interchange of water which is at present prohibited by Parliamentary enactment.

21,213. But do not these provisions encroach upon your principle that there shall be no further control, and that the whole responsibility shall be left on the companies? Does it not throw upon the Local Government Board a considerable responsibility in the matter of ordering things to be done or ordering alterations in things that are proposed to be done?—That is so, in regard to this particular matter and not to the general management of their undertakings to which I was rather addressing myself. This is a particular matter in which one company may wish to have assistance from another, and that is a matter outside the other company's parliamentary obligations, and might in point of fact interfere with the due fulfilment of those obligations. Therefore, here the reference is made to the Local Government Board to determine in what proportion one particular company shall be called upon to assist another.

21,214. Is that not a further measure of control, and a very considerable measure of control?—That is so, but only for doing something outside their statutory obligations.

(*Mr. Pember.*) You might go a step further—outside their statutory powers. We are not allowed to do this now; it is a relief to us to that extent.

(*Witness.*) Certainly. I have already said that you are prohibited from doing it.

(*Mr. Littler.*) That is a power to sanction, they cannot require.

(*Mr. Pope.*) Yes, require, certainly.

21,215. (*Chairman.*) I confess I have a difficulty in seeing any distinction between that power and the power I suggested to you just now, namely this—Known: that it is expedient to go to Wales for a further supply of water; companies answer, no, it is cheaper and better to have storage reservoirs near Staines or somewhere else on the banks of the Thames; it will cost us less money and our shareholders will be safer. It would be analogous to the power that Major-General Scott has just quoted to you—namely, that some public authority should have power to say, no, your economical scheme of very large reservoirs is no good, and you must go to Wales—just as they said, you must leave your intakes at Seething Wells and go higher up the Thames?—I venture, with all deference, to

differ from that view, because the going to Wales would entail an enormous expenditure of capital, whereas this only entails a comparatively small expenditure, and would not, as far as I understand it, empower the controlling authority to call upon the company from whom water assistance was demanded to expend their money in any additional works, such as pumping engines, or filter beds, or works of that kind, in order to give this temporary relief.

(*Mr. Pope.*) That was the intention of the scheme—to give the authority a power to compel a recalcitrant company to contribute to the general good of the whole.

(*Chairman.*) Yes, there is power distinctly to authorise and to order other works for the like object.

(*Mr. Pope.*) That was the intention; certainly.

(*Witness.*) But other works of a like character, I take it, such as the connexions.

(*Mr. Pope.*) Of course, for the purposes for which the scheme was intended.

(*Witness.*) But not to put down another pumping station, for instance, to enable them to afford this additional supply?

(*Mr. Pope.*) I do not know.

21,216. (*Major-General Scott.*) Certainly, I should think it would cover that if it was necessary in order to render a supply available—that is, if a company having inter-connexion, had no water to inter-communicate, do you not think that they might be required to do something which would enable them to have some water to communicate?—I should think not. As I said before, I have not seen the Bill, and do not know what its provisions are, but I should think that that would not be a proper power to put into the hands of the controlling authority.

21,217. That was the question I wanted to ask you—whether it was your opinion that that amount of control was proper or not?—I should say not.

21,218. (*Sir George Bruce.*) Do you think that any Government department should have liberty to order the water companies to spend 20 millions of money without going to Parliament?—Most certainly not. It affects all the interests of the shareholders; the shareholders have advanced their money on certain conditions and there is a parliamentary contract which has been entered into, and I do not think any other body should have the right of upsetting that.

(*Mr. Pember.*) I think with regard to what Major-General Scott has said, none of the provisions of the Bill, so far as they were set out under Question 15,012, suggest that there should be any power to force any company to get more water, but only to allow other companies to participate in the water that they had got up to a point sanctioned by the Local Government.

(*Witness.*) That is how I read it.

(*Mr. Balfour Browne.*) I think the Bill is entirely different, that is all I can say, because it does give the Local Government Board power to require a company to take more water from the Thames. I have got the Bill in my hand.

(*Mr. Pember.*) Yes, but that is another thing.

(*Witness.*) Not to require, but to authorise.

(*Chairman.*) Authorise and order Mr. Hawksley.

(*Mr. Balfour Browne.*) The words of the Act are “authorise or require,” which is the same thing.

(*Witness.*) May I read it?

(*Chairman.*) I have read it twenty times over, do not read it again.

(*Witness.*) I am not referring to the Bill, I am referring to what happened at Question 15,012.

(*Mr. Pope.*) That was the intention, be it right or wrong. The Bill embodies the intention of the suggestions that I read to the Commission, there is no doubt about that. Whatever is involved in the principle we are prepared to stand by, even if it is to an extension of that principle.

(*Chairman.*) Mr. Hawksley seems disposed to dispute it.

Cross-examined by MR. BALFOUR BROWNE.

(*Mr. H. W. Cripps.*) You are about now, on behalf of the London County Council, to cross-examine Mr. Hawksley?

(Mr. Balfour Browne.) Yes, sir.

(Mr. H. W. Cripps.) Might I suggest to you to bear in mind so far as you can to-day what the real matter is referred to us and what we have to report upon, because Mr. Hawksley has gone very widely into a great number of matters and I see that a cross-examination which would follow his examination might take a day or two.

(Mr. Balfour Browne.) I do not propose to go into it at any length; I will be very short, but I will touch upon one or two of the points Mr. Hawksley has dealt with.

(Mr. H. W. Cripps.) I am very glad to hear you say so.

21,219. (Mr. Balfour Browne to witness.) As I understand, you do not approve of any control which would enable a public department to force a company to spend capital on capital account?—No.

21,220. I agree, if I may say so, with General Scott that the principle that is laid down by Mr. Pope and is embodied in the Bill would give the Local Government Board power to do so. Just let me read it to you. "The Local Government Board may in any case of drought or anticipated drought or of accident or emergency authorise or require the taking temporarily of such quantity of water from the River Thames or its tributaries by any of the metropolitan water companies or by the Staines Reservoirs Joint Committee either through their own intakes or by agreement with any other," and then the clause goes on—"and further"—there is another power—"any one or more of the metropolitan companies shall if required so to do by the Local Government Board increase their pumping power so far as may be necessary to give effect to the provisions of this Act and erect, maintain, and use all engines, works, and appliances necessary for that purpose." Now, I understand you do not approve of that control?—To that latter question, no; to the former I do not dissent.

21,221. Is there, in your experience, any such control of a water company existing in any part of the United Kingdom—

(Mr. Pope.) Are we discussing that Bill now?

(Mr. Balfour Browne.) I am not speaking of the Bill.

(Mr. Pope.) Yes, you are; you are asking Mr. Hawksley's opinion upon a Bill which is before Parliament at the present moment. I will discuss it there with the greatest pleasure.

(Mr. Balfour Browne.) I quite agree; just as I am prepared to discuss the Welsh Scheme there.

(Mr. Pope.) I quite agree.

(Major-General Scott.) I limited my questions, Mr. Balfour Browne, to what was on the actual proceedings before the Commission.

21,222. (Mr. Balfour Browne.) But my learned friend Mr. Pope, you will remember, said that what was in the Bill carried out that intention; therefore, I thought it fair to put the actual words. (To the witness.) I am simply upon the question of control which is referred to this Commission. Do you know of any such control existing over any water company in the United Kingdom?—I do not.

21,223. The whole of the difference of control that you suggest to this Commission is that instead of the Water Examiner being, as he at present is, allowed to go into waterworks in London, he should have power to go in?—It is.

21,224. As you are aware, I daresay he has never been refused upon one single occasion entrance into any waterworks in London?—I believe that is so.

21,225. So that the control you recommend is practically no control at all?—I believe the Water Examiner has expressed the wish that—

21,226. He might have that power?—That he might have an absolute power—

21,227. Of going by right instead of by courtesy?—Exactly.

21,228. That is the whole difference?—And I would give him that right.

21,229. There, of course, have been various places in this country where water companies have been complained of by the local authority?—Yes.

21,230. In those cases, as you say, control was not introduced, but in a great number of them purchase

has taken place, is that not so?—It has; but very often not on the ground of any complaint that was made by the local authority.

21,231. Sometimes upon that ground and sometimes upon other grounds?—Yes.

21,232. You, of course, are opposed—invariably opposed—to the transfer of water undertakings from the hands of private enterprise into those of municipal authorities?—I am.

21,233. It is a fact, however, that a very large number of companies have had their undertakings transferred sometimes by agreement and sometimes by compulsion?—That is so—more frequently by agreement than by compulsion.

21,234. But certain cases of compulsion we know?—Certainly.

21,235. Now, as to the 25 gallons per head; it is a fact, is it not, as the noble Chairman was mentioning (I find this in the Report of Lord Balfour's Commission), "When Mr. Fraser, the engineer of the company was before us he explained it"—that is, the large consumption—"by saying that his company found it cheaper to pump water than to supervise and control the waste of water supply;"—you remember that?—That was Mr. Fraser's view, and that view, I think, is not shared by his successor, Mr. Hunter.

21,236. I do not know that that was before the Commission. You have made a list of a certain number of municipalities and companies that apparently have reduced the supply within much narrower limits than the London companies?—Yes, or have never extended them; they are not all reduced.

21,237. I think you said they were mostly instances of reduction after the constant supply had been introduced?—No, you have misunderstood me. Those are towns in some of which the supply has been reduced in this way after constant supply was introduced. In others, they have had constant supply from the commencement.

21,238. Do I understand you that you have selected fairly properly managed concerns?—Yes, I think so.

21,239. Then, in comparing those with London, would you say there was bad management in London as compared with those on your list?—No. Those are towns which have now had the constant supply for a good many years. London is a place in which the constant supply has only just been completed; I have mentioned that, and I am afraid I have not, perhaps, conveyed really the import of it sufficiently. Now that the constant supply has been introduced, I have not the least doubt but that the quantity per head per diem can be reduced correspondingly.

21,240. (Mr. Pope.) And ought to be?—And ought to be.

(Mr. H. W. Cripps.) What is the date of the Constant Supply Act; it was several years ago, was it not?

(Mr. Balfour Browne.) 1872.

(Sir George Bruce.) It has only just been carried out.

(Mr. Balfour Browne.) In some cases.

(Sir George Bruce.) I have only had it for six months, or three months, I think, in my house.

21,241. (Mr. Balfour Browne.) In some parts of London it has been much earlier than in others. I think that is so, Mr. Hawksley?—Yes; I think it was left for the municipal authorities or the vestries to call upon the companies to give constant supply.

(Mr. Pember.) It has increased 25 per cent. in the last six or seven years.

(Mr. Balfour Browne.) It is a fact, as you know, that under the Act of 1852 they were put under the obligation, and that that was not carried out; that an Act of 1860, I think, was passed, of general effect, and then that a further Act was passed in 1872.

(Mr. Littler.) I think it is only right that the Commissioners should know that the Metropolitan Board of Works were bitterly opposed to the constant supply, and did all they could to stop it.

(Mr. Balfour Browne.) I am sure you cannot speak to that.

(Mr. Littler.) It is only since the London County Council has come in that there has been a desire on the part of the public authorities for a constant supply.

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Mr. C. Hawksley. (Mr. Balfour Browne.) In the Act of 1852, I find the provision of constant supply of water by every company; that is the first obligation. That is the first Act, and the last is 1872.

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(Witness.) There was no constant supply, I think, in 1852.

21,242. (Mr. Balfour Browne.) I beg your pardon, I assure you it is in the Act of 1852?—For some reason or another it remained a dead letter.

21,243. I know?—But the vestries were empowered subsequently. The real point is, as an honourable Commissioner has said, that the constant supply has only comparatively recently been introduced, and is not completed yet.

21,244. Are you aware that in the East London district constant supply has been in existence for years?—Yes; the East London, I think, was the first company to adopt it.

(Mr. Pember.) Since 1872.

(Mr. Balfour Browne.) Since 1872, my friend Mr. Pember says—

(Mr. Pember.) And it has been gradually growing.

21,245. (Mr. Balfour Browne.) Therefore, so far as the East London is concerned, at any rate, it might have brought about this economy that we are speaking of any time since 1872?—No, this has been, of course, gradually going on. I do not know how long it is since the East London completed their introduction of the constant supply, but only a very few years, I think.

21,246. Are you aware that in 1891 and 1892, when the Balfour Commission was sitting, the total consumption of the average of the companies was 29·73 gallons per head, while in 1897 it is 35·42?—In 1891 the general average was, according to the Water Examiner's Annual Report, 33·52.

21,247. I think, from the Report of the Balfour Commission, it was 29·73—however, I will correct that if I am wrong?—I have taken it from the Water Examiner's Annual Report, one of the later ones. I may just mention, perhaps, that some time subsequently to 1891 the figures given by the Water Examiner vary from those given in the Report for the particular year, due, I presume, to some correction in the population consequent on the census of 1891.

(Mr. Balfour Browne.) I have taken merely the Balfour Report, and I find it was 29·73.

(Mr. Pember.) Is that East London consumption?

21,248. (Mr. Balfour Browne.) No, the consumption of all the companies, per head. (To the witness.) Now I find that in 1897 it is 35·42, or above what the Royal Commission calculated would be the consumption per head in 1891?—Yes.

21,249. Are you aware that the Chelsea have increased their consumption since 1891, by 9·6 gallons per head; the Kent by 1·51 gallons per head; the Lambeth by 3·18 gallons per head; the New River by 0·93 gallons per head, the Southwark and Vauxhall by 11·29 gallons per head; and the West Middlesex by 5·61 gallons per head?—I daresay those figures are right. There is a general increase, I think, of two gallons per head per diem between 1891 and 1897.

(Mr. Pope.) The Chelsea was only put on the constant supply in the last two or three years. I confess I do not quite see where this comes in.

(Mr. Littler.) The same thing applies to the Kent. The Kent has very largely increased its constant supply in the last year or two, and has not had time to attend to the fittings.

(Mr. Balfour Browne.) We will hear that, I daresay, when some witness comes from the Kent.

(Witness.) In the East London, I might point out that there has been a decrease, between 1891 and 1897, of 4½ gallons per head per diem.

(Mr. Pember.) Is not it much shorter to take it in this way? In 1891, only 64 per cent. of the houses supplied by all the companies had got constant supply, and, in 1897, 89 per cent., so that it has increased 25 per cent. in those six years.

21,250. (Mr. Balfour Browne.) That has nothing to do with what I am asking. I am asking for the increased consumption, and I suggested figures as compared with those to be found in the Balfour Report. (To the witness.) Now I pass to another matter; you spoke upon the last occasion of no damage

being done, practically; if all the available water of the Thames was taken by the companies?—I do not quite follow that.

21,251. I have got the reference—Question 20,725.

(Mr. Pember.) Would you mind telling me whether you are comparing there, as I am told, the companies' figures as to the amount supplied before Lord Balfour's Commission with Major-General Scott's figures in the latter year.

(Mr. Balfour Browne.) Yes.

(Mr. Pember.) Now, as I understand it, Major-General Scott gets his consumption out by taking a lower number of persons per house, or per supply, than the companies were taking in 1891. If that is so, that would account for a very considerable amount of the difference between your 35 gallons and your 29 pint something.

(Mr. Balfour Browne.) I have put these figures already to Mr. Middleton, and he accepted them as accurate.

(Mr. Pope.) Yes, the figures; but then the cause of the difference is the only important matter.

(Mr. Balfour Browne.) If that is so—I do not think it is, but I cannot say at the instant where I got the figures—

(Mr. Pope.) No, I daresay not.

(Witness.) I think if you turn to the Water Examiner's Report for the year 1891, you will find it there stated that the general average of the companies was 32·09.

(Mr. Pember.) That precisely bears out what I say.

(Witness.) But if you will turn to a later Report, the Report of 1897, you will find that that figure has been modified, and is there placed at 33·52—I presume in consequence of some modification of the population, due to the returns of the census of 1891 having then become available.

21,252. (Mr. Balfour Browne.) I cannot say; but, comparing your 32 with the 35·43, that shows, even upon those figures which are comparable, an increase of three gallons and a half per head?—But those figures have been subsequently modified by the Water Examiner, and I presume that the later figure of 33·52 is the correct one; I only can surmise that from the fact of its being later.

21,253. Again, you have said that at the present time there are comparatively few baths in the houses of people consuming water; if the number is increased, the consumption would naturally increase per head?—There is an increase going on, due to the larger introduction of baths and water-closets.

21,254. Are you aware that by your treating metered supply as trade you are in many cases doing an injustice, because considerable domestic supplies are also metered?—No, I am not aware of that; in fact, there is no such thing.

21,255. Are you aware that schools and establishments of that sort are supplied, not upon rateable value, but upon meter?—But those are not domestic supplies.

21,256. You think not?—A school is a trade supply, certainly.

21,257. But the water that is passed through the meters is used for domestic purposes. Are you not aware of that?—Yes; but it certainly is a trade supply.

21,258. You call it a trade supply?—Certainly.

21,259. For instance, in answer to one of the Commissioners, at Question 20,725—and you repeat it elsewhere—"If you were to ask me what might happen 500 years hence, one could not say. When we have used up all the available water of the Thames, then it will become necessary, of course, to go elsewhere." That is a suggestion, as I understand, that the whole of the water of the Thames might be taken for drinking purposes in London?—No, it did not mean that. By the "available water"—now I know what it means—was meant the water remaining after the given quantity had been allowed to flow over Teddington Weir.

21,260. (Mr. Mellor.) What do you take to be the "given quantity"?—The "given quantity" is a matter which will, I presume, have to be considered. The quantity that I have taken in all my tables and calculations has been 200 million gallons per diem whenever the river produced it, which is almost always; but

I think, and have ventured to express that opinion, that 100 million gallons per diem would be a sufficient quantity.

21,261. (*Mr. Balfour Browne.*) That is what I am coming to. You said that the 200 million gallons was not necessary, and that 100 million gallons would be sufficient, that is to say, as I understood, that even that 100 million gallons could be reduced at certain times?—Just those very few exceptional occasions in a year like 1898, in which, I think, during 10 days only, the quantity became less.

21,262. Do not enlarge, I think we are at one, and I do not care to go into the occasion. Do you say—and have you considered this matter carefully—that it could be reduced either to 100 million or less without causing the silting up of the Thames below the point of abstraction?—Yes, I think it would not cause that, because the chief scouring out of the Thames is due to the great floods.

21,263. We will come to the floods immediately. First we will deal with the question of land water without flood; at the time of the tidal influence, the water, when the high tide comes, is reduced to quiescence for a certain period, is it not?—Yes.

21,264. And when that takes place, it drops its silt on the bed of the river?—Yes, I daresay it does.

21,265. I will come back to the floods, I assure you. Unless there is some force there and then to sweep that away, that silt will accumulate, and the tidal influence will go lower and lower down the river, will it not?—Yes, but you find you have that force in the recession of the tidal water itself.

21,266. Do you really mean that the recession of the tidal water would take away the silt that is brought up?—Yes.

21,267. Without land water?—It will take away the same amount of silt that the tidal water brought up, I think.

21,268. Is there a single case where such an estuary is kept open by tidal water alone, without back water from the country? Is it not invariable that a long narrow gap like the Thames is silted up unless there is water from behind?—It will be difficult, I think, to find an instance in which there is not water from behind, because the very fact of the long narrow estuary being there is due to water from behind.

21,269. You know that no creek can be kept open, such as this, by tidal influence alone, without land water?—I am not prepared to say that.

21,270. Have you studied the *régimes* of any river?—I should not like to say that it either could or could not without land water.

(*Mr. Pember.*) I do not think Milford Haven is very much help; I do not know.

21,271. (*Mr. Balfour Browne to witness.*) Have you studied the *régimes* of any river?—Yes.

21,272. Where?—I have to some extent in the Thames, but not very largely; up in the North of England.

21,273. According to you, 400 million gallons might be taken from the Thames?—Yes.

21,274. Are you aware that, according to the Water Examiner's Report, in the year 1898, the average was 679,000,000 gallons a day in the Thames?—I daresay that was so.

21,275. Now, do you say that that might be reduced to 97,000,000 gallons without injury to the *régime* of the river?—I think so.

21,276. You think so?—Yes. I should like to observe this: that in the lower part of the river the water which is diverted is all returned through the sewers, that is, the water which is taken out of the river is all returned to the lower portion by means of the sewers.

21,277. I was speaking, of course, of the place where the tidal action ceases, which is the higher part of the river, up by Richmond, where the water is not returned, of course; the water is returned from the sewers, either by storm water overflows in London, or by the great sewer at Barking and Crossness?—Yes.

21,278. Now you said that you depended upon floods. I think the flood was taken by the Royal Commission at 2,300 million gallons of water per diem. Was it not at Teddington Weir?—That was an attempted definition of a flood—I forget now by whom originated—but

it was the discharge of the river when running bank full.

21,279. Taking that definition by whomever it was given, are you aware that from 10th January to the 25th November 1898, a period of 320 days, there had not been a single flood reaching that amount of water?—But that definition was not intended to mean a flood for the purposes of scour.

21,280. At any rate, it is a definition of a flood?—No; I do not think you can say that when a river is running bank full there is not a flood in the river. I should not agree with the definition for that purpose.

21,281. At any rate, the freshets, perhaps, would be much smaller than that—those freshets might go into the reservoir at Staines?—The freshets would be anything, of course, between the dry weather flow of the river—

21,282. And the 2,300 million gallons?—Yes.

21,283. Are you aware that under the Balfour Commission it was recommended that the first of the flood, namely fifteen days, should be rejected?—Yes.

21,284. That, of course, would have gone (although it would not be fit for drinking, according to that Commission) to scour, would it not?—Yes.

21,285. Are you aware that the proposal now, is not to reject that water, and, therefore, is to take away that water which would have been used for the purpose of scour?—Certainly.

21,286. And yet you think there will be no effect on the river?—They will only take away, you know, a portion of that water—so much of it as they can pump.

21,287. Every drop that you take away must to some extent take away scouring power from the river?—Yes, that is a proposition which is obvious.

(*Mr. Balfour Browne.*) It must be so.

21,288. (*Mr. Mellor.*) And the water is generally taken when the river is low, is it not, in order to avoid pollution; the water is best when the river is low?—The water is best; but it is not usually taken then, that is to say, they have to take it, and it is supposed that the companies will take it practically all the year round.

21,289. Do they take it in flood time, do you know?—Some of them do and others, I think, exclude it for a time for the sake of their filter beds. They are not now working under the same conditions they would work under when they had made many of those reservoirs.

21,290. An answer was given to me, I forget by whom, but the witness said that when the river was swollen or in flood, the water was far more polluted than when the river was low and clear, and therefore the water companies tried to take the water at a time when the river was clear?—Yes, but you must distinguish, I think, between pollution meaning merely the suspended matter, and harmful pollution. I think it will be shown to you by chemists who will be called that there is no harmful pollution, and therefore the exclusion of the sedimentary matter is rather a matter of convenience for the companies, inasmuch as the water will not require so much filtration.

21,291. (*Mr. Balfour Browne.*) I am, right, am I not, in saying that you could not get 400 million gallons from the Thames by any storage without taking the flood waters?—No, I think you could not.

21,292. (*Chairman.*) How soon after the flood—do you mean taking it at once?—It would not be necessary to take it at once, but—

21,292a. Then how soon after the flood, do answer shortly, please?—I do not propose to put any limitation.

(*Mr. Balfour Browne.*) That is what I understood.

(*Mr. Pember.*) You leave that to the companies—that was the evidence.

(*Witness.*) Yes; leave that to the companies.

(*Mr. Pember.*) They are bound to give clear water and it would be in their discretion how much they would take in. Have you got, my Lord, the Water Examiner's Report for 1897-98.

(*Chairman.*) No, I have not.

(*Mr. Pember.*) If you had you will find, on page 45, the average rate of supply per head from 1881 down to 1897 inclusive, and you will find that 1891 is taken to be 33'52, and 1897 is taken to be 35'43. On page 29

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you will find the increase of constant supply in the same period. It is rather convenient that you should have that.

(*Sir John Dorington.*) Does it give the increase for each company?

(*Mr. Pember.*) Yes, sir; if you like I will just hand you in this report with the two pages marked.

(*Chairman.*) Thank you.

After a short adjournment.

21,293. (*Mr. Littler.*) My Lord, before my friend goes on with his cross-examination, will you allow me, not as representing the Water Companies, but as representing Middlesex, to hand in a table, and if your Lordship approves of it, I should like to have it put on the notes. It is a table of comparative charges of all the companies and municipal authorities supplying water in Middlesex. It explains itself. It is headed "Table showing the difficulties of assimilation of charges in the county of Middlesex."

(*Chairman.*) You offer to hand this in without the slightest proof. Could not you get it agreed to by the other side?

(*Mr. Littler.*) I do not think there can be any doubt about it, because the returns are all from the companies and the corporations.

(*Mr. Balfour Browne.*) Is it powers or actual charges?

(*Mr. Littler.*) Actual charges.

(*Mr. Balfour Browne.*) Then I should think we must have some means of checking it.

(*Mr. Littler.*) I have not the least objection to your doing that, and then let it go on the notes to-morrow.

(*Mr. Balfour Browne.*) If it had been a mere extract from an Act of Parliament, I would have accepted my friend's statement, but as it is a matter of fact, I think we ought to be allowed to check it.

(*Mr. Littler.*) I will hand it to my learned friend now, and he can check it.

(*Mr. Balfour Browne.*) I have not the time to do anything with it, but I will pass it on.

21,294. You said at Question 21,024 that these Tables Nos. 10 and 11 were somewhat unique, and had been prepared at great cost?—That is so.

21,295. Do you remember that as long ago as the 22nd of November 1897, at Question 148, we put in, the actual charges of the London companies, and that our first witness said that if the counsel for the water companies could find any error in it, they would be able to clear up that point. Are you aware that never since that time has any criticism been made with regard to that statement?—I do not think I was previously aware of the statement. I have attended but very few of the meetings of the Commission.

21,296. Let me see if I understand what this Table 10 purports to show. First of all, you say that it includes various towns, not all towns, having a population of 100,000 and upwards. You answered the other day that you had left out Glasgow and Edinburgh. Are you aware that their charges are lower than any of those that appear in this list?—I have not compared them. They are not in England, and therefore I omitted them.

21,297. Are you aware that Croydon has a population of over 100,000, is in England, and has very low charges, and that you have not included it in this table?—Part of the Croydon district.

21,298. A portion being supplied by the Lambeth Company, the rest by the Corporation of Croydon?—I think when this inquiry was commenced, Croydon had not so large a population; but whatever population they may have, part of it is in the district of one of the London water companies, and, therefore, it was not thought proper to take it into account.

21,299. Are you aware that the corporation supply over 100,000 people?—I am not.

21,300. As a fact, do you know that the charges in Croydon are very low?—I have not looked into them.

21,301. Are you aware that they are lower than the Lambeth Company that is supplying a part of that district?—It is very possible.

21,302. Just let me see if I can understand this table. Table No. 10, you have taken out some 19 towns?—Yes.

21,303. The circumstances of supply, and the circumstances of charge in every one of those cases must differ?—Yes.

(*Mr. Balfour Browne.*) We will take first the 10l. house with a rateable value of 8l.

(*Mr. Pember.*) I do not know that it is very important, Mr. Balfour Browne, but Croydon has not 100,000 population.

(*Mr. Balfour Browne.*) Croydon has 104,000.

(*Mr. Pember.*) 96'3. It is your own table put in at Question 3538.

(*Mr. Balfour Browne.*) I am told the population is 104,000.

(*Mr. Pember.*) This is put in your own table.

(*Mr. Balfour Browne.*) There is no magic in 100,000.

(*Mr. Pember.*) That is another story, as Rudyard Kipling would say.

21,304. (*Mr. Balfour Browne.*) Are you aware that in this table you have included towns of less than 100,000?—I believe not. I believe they all of them have 100,000.

21,305. I want to understand the table first. In many of those towns there would be no houses of 360l. gross estimated rental at all?—Oh, very probably in some of them.

21,306. So that as far as the larger figures in this table are concerned, the table would have no applicability at all to a great number of those towns?—I do not say a great number, because in every one of those towns they must have provided for the supply of such a house because these are the charges that they make.

21,307. Take a 10l. house. You are comparing all through this table (take for instance the first line) a 10l. house in London with a 10l. house in every one of those places?—Yes.

21,308. Supposing that I get a house in Blackburn, which, I think, is the first place you mention, for 10l.: we will say, it is a three-roomed house. In London, if I had to pay 20l. for that house, should you not compare a 20l. house with the 10l. house, and not a 10l. house with a 10l.?—No, you cannot do that. It would be utterly impossible to get the data for the comparison.

21,309. Let us see. Suppose there is a three-roomed house in Blackburn, for which a man pays 10l., would not his requirements for water be practically the same as that of a man in a three-roomed house in London, where he would have to pay 20l.?—Very possibly. I think we may take it that it would be so.

21,310. Does not that vitiate the comparison altogether?—No.

21,311. The man in London is paying for the same quantity of water twice the amount that the man in Blackburn is, and yet you have compared it as if he were paying exactly the same amount?—Yes, that is because he lives in London. He may live in one part of London and only pay 10l., and he may live in an exactly corresponding house in another part of London and have to pay 20l. You cannot help these differences, they are due to situation.

21,312. The differences are incident to being in London, and the rateable value being higher?—It depends upon what part of London. If you are in the West End, you pay at least double the amount for a house, or more than that, than you would do for a similar house in the East End.

21,313. But all the way through you are comparing it as if for the same house in the two places, the man pays exactly the same gross estimated rental, and the same rateable value?—Not for the same house.

21,314. Yes, for the same house?—I am ascertaining what a man, who can afford to pay 10l. a year for the house he lives in, will have to pay for his water supply in the particular town to which you refer.

21,315. Just follow. I will only deal with one. Take a 20l. house. In Blackburn he pays 1l. 12s.?—Are you taking rateable value or gross?

21,316. I am taking the 20l. rateable value, 1l. 12s.?—Yes.

21,317. Now suppose an exactly similar house in London was 40l. rateable value, the people would use the same amount of water, but they would pay twice the amount of water rate.

(*Mr. Pember.*) Two blacks do not make a white.

(*Mr. Balfour Browne.*) Would you mind, Mr. Pember, not interrupting? I did not ask that.

(*Mr. Pope.*) Obviously, it must be so.

(*Witness.*) It must be so.

(*Mr. Pember.*) You found the same difficulty yourself in the table at Question 148. You put in a table in exactly the same way.

(*Mr. Balfour Browne.*) Not only did we find the difficulty, but Mr. Gomme distinctly stated that the circumstances of variety were so infinite that a comparison could not properly be made.

(*Witness.*) And if a man in Brighton lived in a 10l. house, he would only pay 15s. for his water.

21,318. (*Mr. Balfour Browne.*) I think Major-General Scott practically agreed. I have his words before me. He said: "There is no analogy between London and these places in respect of trade supply." Now, are not the circumstances so infinitely different that there is no real comparison to be instituted by your Table 10 at all?—No, I am afraid I fail altogether to see that.

21,319. I will just take one case to see whether it is really a good comparison. First take Blackburn, which is the first on your list; are you aware that the Blackburn Corporation purchased in the year 1875?—I daresay that was so. I do not remember the date.

21,320. And that they paid annuities equal to 32,000l. per annum?—I am not acquainted with the particulars of their purchase.

21,321. But in order to see how these rates are accounted for, you must go into the circumstances, must you not?—Not into the circumstances of the purchase necessarily.

21,322. Do you know that immediately after the purchase, which represented 32,000l. a year, Blackburn came to Parliament in the year 1877 and got authorised 459,000l. extra capital to carry out entirely new works?—Yes, I dare say that was so. I take it from you. I did not know it.

21,323. Would not these circumstances account for high rates in Blackburn?—I dare say.

21,324. The same thing might occur in London, you mean?—Yes, or elsewhere.

21,325. Only that your comparison of London figures are without the new scheme, while your comparison of Blackburn figures are with the new scheme?—That is one of the disadvantages to Blackburn of the purchase.

21,326. It only shows that you are not comparing like with like?—All this professes to do, and what I believe it does most thoroughly, is to inform the honourable Commissioners what a man pays for water who lives in a house of a particular rent in any one of these places. What kind of a house he will get for that rent will vary very much in each of these provincial places, and will vary very much in each individual place, according to the situation of the particular house he lives in if he lives in a poor part or a good part of the town.

21,327. Do not you think the fact that enormous capital expenditure in one case may justify a higher rate, which is not justified when the capital expenditure has been small?—No doubt.

21,328. And you have not inquired in any one of these cases as to what the reason of the high rate is?—No, I take the rates as they are; I have nothing to do with the reason.

21,329. If you are to compare the London rates with these, would not you need to add to the rates that are existing to-day? What would be necessary to pay upon the new capital either of the Welsh Scheme or of the Staines Scheme?—No, there are certainly no additional rates which are proposed to be charged in London if the Staines Scheme be carried into operation.

21,330. It is quite obvious, is it not, that the companies will not spend money unless they can see their way to a return on it?—No, I do not think it is quite obvious. The companies have to fulfil their obligations. They are not entitled to one shilling of dividend until they have fulfilled their obligations.

21,331. You have deprecated any power being put upon them to go, for instance, for the Welsh Scheme, because I understand you to say that might land them in a loss?—Not a power—an obligation. What I

deprecate is that the power should be put in one body of compelling another body to spend their money.

21,332. Because that might land the company in a loss?—Yes, it would be manifestly unfair. Who would invest under such conditions?

21,333. If the companies were to be allowed the initiative in the matter, and to go to Wales, they would have to go to Parliament for a Bill. Do not you think that they might then very reasonably say, "We cannot spend all this money in Wales without an increased charge?—Yes; but the suggestion is that some other authority is to say, "You must go, with your present authorised charges, to Wales or elsewhere at our bidding and spend all this money to provide another supply of water."

21,334. You are in this table comparing London, without its new scheme, with Blackburn with its new scheme. Are you aware that the same thing is true with regard to Manchester, and that in those rates Manchester is paying the interest on 2,600,000l. for Thirlmere, which is to be the supply for years and years to come. Are you aware of that?—Yes. But I believe they have not altered their charges in Manchester.

21,335. No; but the interest is in that charge?—Yes. I believe at Manchester they had accumulated large reserves which enabled them to meet the interest on the Thirlmere expenditure.

21,336. Then is there not another way in which you are quite unfair in comparing these? Are there not included in these corporation rates large profits which are carried to the relief of rates?—In some cases, there are, no doubt.

21,337. In Birmingham I find that in these rates there is 25,812l. a year profit, which is carried to the relief of rates?—At the expense of the water consumer.

21,338. True?—And if the undertaking had remained in the hands of the company no doubt the company would have been earning its maximum dividends, and therefore would have been compelled to reduce the charges for water which the corporation have not been compelled to do, and have not done.

21,339. Please follow this. That 25,000l. in the case of Birmingham goes into the pockets of the ratepayers?—No doubt.

21,340. If the companies had remained, all profits would have gone into the pockets of the proprietors, the shareholders, unless the maximum had been earned and arrears had been paid off?—Yes.

21,341. Are you aware that the arrears of dividend in the case of the London Companies amount to 5½ millions?—I daresay that is so—I do not know.

21,342. Is not the fact this: that if those companies are allowed to remain in possession till 1941, although they may be compelled to raise new capital by auction clauses, they will, out of the capital that they have raised, be able to pay the whole of these back dividends, 5½ millions?—They will be enabled to do so. They will have the right to do so. I do not know whether they will be able to do it; I have not calculated it.

21,343. And will not the raising of capital at 3 per cent. (as you say they will be able to do it under the Auction Clauses), or 3½ per cent., or whatever it is, enable them to raise money which they could give to their shareholders for back dividends?—Yes, I think it would.

21,344. Are you aware that the New River Company is not limited in dividends at all?—There are some of the companies, I think, which are not limited in regard to only a small portion of their capital.

21,345. Again—just to run over some of these towns—you have got Birkenhead, 3,691l., which it carries off profit to the rates; Brighton, 7,560l.; Bolton, 11,573l.; Derby, 5,329l.; Halifax, 8,480l.; Huddersfield, 2,169l.; Hull, 12,341l.; Leeds, 11,414l.; Leicester, 1,500l.; Nottingham, 4,132l.; Oldham, 2,132l.; Salford, 4,523l.; Sheffield, 9,518l., and Wolverhampton, 5,262l. In every one of those towns the ratepayers are profiting to the extent of those moneys I have mentioned by reason of the fact that the works are in the hands of the corporation?—At the expense of the water consumers.

21,346. Forgive me. That expense is shown in your table. It is paid in these rates?—Yes, but it comes out of the pockets of the water consumer, to go into the pockets of the ratepayer. Then let me point out this

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too, please—that some of these places are making these large profits knowing that they are on the eve of a very large expenditure for additional works.

21,347. Most of them have made the expenditure?—The thing is always going on. Where the population increases they make the expenditure. Then that becomes fully utilised and they have to make further expenditure.

21,348. Of course, the return to the water companies, or to the water authority, depends for domestic matters upon the rateable value of the houses in the towns?—Yes; the rateable value, or rental, as the case may be.

21,349. We can only deal with one. I will take rateable value. Are you aware that the average rateable value in London is 56*l.* a house, while in Blackburn the average rateable value is only 16*l.* a house?—That may be.

21,350. Would not that enable a company in a town where the average rateable value is 56*l.*, to draw a much larger amount out of the public than in a town where it is only 16*l.*?—Yes, just as Brighton does.

21,351. And to show how fallacious your comparison is, do you know that not one of those towns that you have put in to compare with London anything like approaches the rateable value of 56*l.*? In Bradford the rateable value averages 22*l.*, Birmingham 20*l.*, Birkenhead 25*l.*, Brighton 34*l.*?

(Mr. Littler.) Will you tell us, Mr. Balfour Browne, for our information, does your 56*l.* include only the inhabited houses, and not the warehouses, and shops, and other things; because it is incredible?

(Mr. Balfour Browne.) I believe it is only the houses.

(Witness.) I should doubt it.

(Mr. Littler.) It is impossible.

(Mr. Pope.) Your assertion may be accurate, or otherwise, but we cannot accept it as a proof of the figures put to the witness.

21,352. (Chairman.) I was just going to ask, Mr. Hawksley, do you accept the fact that the average rateable value of a house in London is 56*l.* a year?—No. I do not know it at all. I have no means of verifying it.

(Chairman.) Averages are, to my mind, hateful things; they are always misleading.

(Mr. Balfour Browne.) I am told it is 56*l.* with the railways, and 48*l.* without.

(Mr. Littler.) That includes all the breweries, and all the warehouses, and people who do not use water, and all the gas companies.

(Witness.) And the shops.

21,353. (Mr. Balfour Browne.) If you do not know these things, what is the good of your table? If all these circumstances differ so enormously, you are comparing things that are absolutely unlike?—I think it is more good than the London County Council table which has been already put in, and they did not differentiate in regard to all these circumstances. It would be impossible to do so. And I want now to take this opportunity of saying this, if you please, as bearing upon the question which you put to me. You suggested that this table was fallacious. I say most distinctly it is nothing of the kind. It is what it professes to be—a table showing what a man who lives in a house for which he pays a certain rental will have to pay for his water in any one of the towns enumerated.

21,354. Although the man who lives in that house in one place would have, perhaps, two rooms, and in the other four or five, and would use in the latter twice as much water?—No, he would not necessarily use twice as much water.

(Chairman.) Has a man in Blackburn twice as many children, and twice as many servants?

(Mr. Balfour Browne.) The whole comparison is wrong in this way—

(Chairman.) I quite appreciate your point.

(Mr. Balfour Browne.) I say that if a man has three rooms in Blackburn, he has, probably, just as many children as a man with three rooms in London. I do not know that there would be any distinction.

(Mr. Littler.) Most of the 20*l.* houses in and around London contain two families, which occupy three rooms.

(Mr. Balfour Browne.) I daresay there is overcrowding in various other towns, too.

21,355. (To the witness.) Are you aware that the average rateable value in Bradford is 22*l.*, in Birmingham 20*l.*, and the very highest I can find of all your towns is 34*l.*—Brighton, and that is, of course, a special case.

(Chairman.) What do you say the average rateable value of houses in Birmingham is?

(Mr. Balfour Browne.) The average rateable value of all the houses in Birmingham is 20*l.*, as compared with 56*l.* or 48*l.* in London.

(Chairman.) What are the limits? What is the maximum and what is the minimum?

21,356. (Mr. Balfour Browne.) I do not think I have those. But I have asked this question: Would there be many houses of 360*l.* gross estimated rental in a town like Birmingham?—(To the witness.) Do you know that?—I really do not know. No doubt there are some, but I do not know how many.

21,357. In London there would be a very large number of such houses?—Yes.

(Mr. Mellor.) You are speaking, as I understand, of dwelling houses in Birmingham?

(Mr. Balfour Browne.) Yes.

(Chairman.) Including Edgbaston?

(Mr. Balfour Browne.) I do not know, but is Edgbaston within Birmingham?

(Chairman.) Yes; it is within the district.

(Mr. Balfour Browne.) Within the municipal boundary?

(Chairman.) Yes.

(Mr. Balfour Browne.) If so, yes, because of course, although there are very good houses, the average is brought down by the very large number of small houses.

(Chairman.) Birmingham has cleared away most of its small houses.

(Witness.) Of course, these highly rated houses in London help to pay for the smaller ones.

21,358. (Mr. Balfour Browne.) Quite so. And they help better in London where the average is 48*l.* or 56*l.* than in a town where there are far more smaller houses, like Blackburn or Birmingham?—No doubt.

21,359. That is exactly the point where I take it your table is fallacious.

(Chairman.) Mr. Balfour Browne, I do not want to interrupt or embarrass you; but may I ask how you got the average rental of Birmingham? Have you inquired the rental of every house in Birmingham?

(Mr. Balfour Browne.) No, but we have taken the number of houses and total rateable value, or gross estimated rental and divided one by the other, which gives the average.

(Mr. Littler.) Then you have to take out all the public works and all the factories.

(Chairman.) Yes.

(Mr. Balfour Browne.) I believe with regard to two towns, Bradford and Manchester, we have a great number of details going in the direction your Lordship asked, but not in the other cases.

(Witness.) I may point out that the man who pays 10*l.* for a house in London gets his water at very little more than half the cost of the charges in the average of the 19 provincial towns.

(Mr. Balfour Browne.) This, my Lord, is a return sent to us by the Deputy Town Clerk of Bradford. Houses not exceeding 10*l.* are 38,370. That is the number of houses not exceeding 10*l.* Above 10*l.* but under 20*l.*, 6420 houses; above 20*l.* and not exceeding 30*l.*, 1320 houses. Then the numbers go down very rapidly, 30*l.* to 40*l.* only 460 houses; 40*l.* to 50*l.*, 230 houses; 50*l.* to 60*l.*, 130; 60*l.* to 70*l.*, 70 houses; 70*l.* to 80*l.*, 40 houses; 80*l.* to 90*l.*, 30 houses, and 90*l.* to 100*l.* only 14 houses. For houses and shops combined and houses above 100*l.* the whole of the rest—5,000 altogether.

(Mr. Mellor.) Those must be dwelling houses, and only dwelling houses in Bradford, because in Bradford there are a great number, not only of factories, but of large places of business.

(Mr. Balfour Browne.) Those would probably be in the 5000 at the end which I have already given above 100*l.*

See 148.

(*Mr. Pember.*) Did I catch that in Birmingham there are no less than 38,370 houses under 10l.?

(*Mr. Balfour Browne.*) No. Bradford 38,370 houses not exceeding 10l.

(*Chairman.*) Is the New Street Station in Birmingham reckoned as one house?

(*Mr. Balfour Browne.*) I should think probably so, my Lord.

(*Mr. Littler.*) In Bradford there are whole heaps of double houses—one man occupies the upper floor and another the lower.

(*Mr. Balfour Browne.*) I am told the station is within the area of two different rating authorities; so that it would be divided into two different hereditaments.

(*Mr. Littler.*) And that would be counted as one 20l. house in London.

(*Mr. Balfour Browne.*) I see that there are a very small number above 100l.—apparently 5,000 in Bradford.

(*Mr. Pope.*) Comparing the 10l. house; what is the accommodation of a house in Bradford of 10l. rateable value?

(*Mr. Balfour Browne.*) We know it is about equal to double the amount in London.

(*Mr. Pope.*) No.

(*Mr. Balfour Browne.*) That is what we say.

(*Mr. Pember.*) I take leave to say that there is not one word of what my friend is putting to the witness that is evidence in the slightest possible degree.

(*Mr. Balfour Browne.*) Do you know that in London, to compare with that return from Bradford, there are 47,000 houses with a rental of over 100l. a year?

(*Mr. Pember.*) He does not know.

(*Mr. Balfour Browne.*) You do not?

(*Witness.*) I do not.

(*Mr. Balfour Browne.*) Your table seems to me to be founded upon ignorance.

(*Mr. Pember.*) If all you say is true.

(*Witness.*) A knowledge of the facts suggested was not required for the preparation of this table. This table is founded on facts to show what it professes to show, and that I can only repeat again is what a man living in a 10l. house, for which he pays a particular rental, has to pay for his water in the various places. That is all it professes to show, and I maintain it does show that very exactly.

21,360. (*Mr. Pope.*) If we were comparing these 38,000 Bradford houses with the 10l. houses in London, how does that bring it out in your table, because that is what my friend is driving at. He says that you are not comparing the same accommodation or consumption in the one case with the other. Now, suppose a man pays 10l. a year in London, what does he pay for water?—If he pays 10l. a year rent in London, he will pay 7s. 10d. for water.

21,361. And what does he pay in Bradford?—And in Bradford he pays 18s.

(*Chairman.*) Yes; but then Mr. Balfour Browne's point is that the man who lives in a 10l. house in Bradford is a much higher and better and bigger man, and that he can afford his 18s.

(*Mr. Pope.*) Yes, that is the argument.

(*Mr. Balfour Browne.*) Not at all, my Lord. If he pays 10l. in Bradford he would contribute, we will say 18s., but that same man would in London have to pay 20l.; and I say you ought to compare what he pays on the 20l. with the 18s. in Bradford.

(*Chairman.*) That is another way of putting what I put.

(*Mr. Mellor.*) With the accommodation?

(*Mr. Balfour Browne.*) With the accommodation, and of course the idea of paying rates is in reference to the accommodation, because it is supposed, in a house with 10 rooms, there are more people than in a house with one.

21,362. (*Mr. Pope to witness.*) Now, suppose it were a 20l. house, and make the comparison in that way?—May I say, in answer to Mr. Browne, that if a man were living in London in a 20l. house, he would pay 15s. 8d. for his water, on the average of the eight companies, as against 18s., which he would pay in Bradford on a 10l. house.

(*Mr. Balfour Browne.*) Averages are fallacious?

(*Witness.*) When they do not answer your purpose.

21,363. I think they are fallacious, whether they answer the purpose or not?—Would you like the charges of the different companies?

21,364. Have you considered that in those cases that are in your list, in a large number of the towns, there is an absolutely free use of water for public purposes?—Yes, there is.

21,365. (*Mr. Littler.*) Do you know it to be so, because we have some information about it?—I believe in some towns they do not make any charge for water for public purposes, as they ought to do, and in others they do make a charge. It varies in the different towns.

21,366. (*Chairman.*) Do you know any town in which they do not charge some other department of the corporation for the water used for public purposes?—In some towns I think, my Lord, they do not.

21,367. (*Mr. Balfour Browne.*) They do not charge at all?—In other towns they do. It rather depends, as I think I remarked on the last occasion, on whether they want to show a good return or a bad one in any particular department.

21,368. In looking, therefore, at the prices charged in these various towns, would it not be necessary to know whether charges were made for public watering, while in London as a fact, of course, we know that a charge is made—that the water companies do not give the water for nothing?—Yes, they do not give the water for nothing, and they ought not to do. I may mention an instance if you like. I had a case brought before me on Friday last, not in regard to this matter, but in another matter in which I am professionally concerned, and where the corporation has the waterworks, and where they supply the baths for 10l. a year. The waterworks manager was telling me only last week that they were complaining that while they charged the baths only 10l. a year for the water, the baths used about 300l. worth.

21,369. Quite so, that is a profit got by the ratepayers?—No. It comes out of one pocket, and goes into the other.

21,370. It is not paid in the water rates?—No, they do not pay. What happens is they enable the baths committee to show a good return on their baths, at the expense of the waterworks.

21,371. Again, in all these charges that you have got in your Table No. 10, there is the repayment of the debt?—Where the debt has not been repaid, no doubt that is so.

21,372. Compare that with London; there is no repayment of debt going on, except to the very small extent of the sinking fund, as we know?—No.

(*Chairman.*) And the replacement of the plant out of revenue. That takes the place of the sinking fund in London, as has been explained to us.

21,373. (*Mr. Balfour Browne.*) The replacement of plant out of revenue? Of course the corporations would do the same probably. So that there would be two sinking funds in the country, and only that one sinking fund in the case of London. But Mr. Hawksley has pointed out that the sinking fund is one of the great disadvantages that the ratepayers have to bear. (*To the witness.*) In every one of your 21 places, or 19 places I think it is, there is a sinking fund included in these rates, which is buying the water undertaking for the ratepayer?—Not, I think, in every one; but I cannot tell you which. In a number of them, no doubt that is so.

21,374. Is it not a fact that in those cases, as I have instanced in Liverpool, and, to some extent, Birmingham, and certainly to a large extent, Manchester, they have provided for a better supply in the future?—Yes, that is so.

21,375. New works, such as Thirlmere, you have already given?—And in others they are just at the end of their tether, and will have to make a considerable additional outlay.

21,376. Take your Table 12 that you have put in to-day. I will deal with a 12l. house, if you like, in column 21, you have the average charges made by the local authorities—those 19—1l. 0s. 8d.; now, if I am right as to the difference of rental value at the two places, that 1l. 0s. 8d. ought not to be opposite the

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11s. 9d. of the London companies, but opposite the 1l. 4s. 4d.; and in that case it would show that the charges were smaller in the municipalities?—I do not quite follow the 1l. 4s. 4d., because you have taken a 24l. house there. I think you have got at the wrong column:

21,377. I was taking a 12l. house equal to a 24l. house?—Yes.

21,378. In that case the 1l. 0s. 8d. would be opposite the 1l. 4s. 4d., if I am right, and if the 12l. house and the 24l. house are comparable; and, therefore, it would show that the municipalities were supplying at a lower rate than the London companies?—Yes. But I do not admit the comparison.

21,379. (Mr. Pember.) Is that the same rental of house?—No, it is comparing a house of 12l. rateable value with a house of 24l. rateable value.

21,380. (Mr. Balfour Browne.) You have spoken about the repayment of debt; are you aware that in Blackburn, the first on your list, the repayment of debt is equal to a rate of 2'3d. in the pound?—I do not know it.

21,381. In Bradford 6'6d. Now these two will do for comparison. If that is so, surely you ought to have eliminated the debt in order to make a true comparison, ought you not?—You mean that off the 18s. I ought to have taken 6d.

21,382. Or whatever it is?—No; 10 times 6d. equals 5s.

21,383. Yes; in fact it is 10 times 6'6d., so that it would be even more than 5s. So, in order to make a fair comparison, the sinking funds ought to be eliminated, ought they not?—It depends upon the purpose you want them for. This shows what the man has to pay. They have to pay these sinking funds.

(Chairman.) It is no consolation, as somebody said, to know that one's grandson will pay very much less.

(Mr. Balfour Browne.) No, it may not be a satisfaction to the particular man, but we must remember that these rates are buying the hereditament, as well as paying the annual expenses.

(Mr. Balfour Browne.) My Lord, I have a great number of other smaller points.

(Witness.) There is, I am reminded, a twopenny rate in Bradford in addition to those charges.

21,384. (Mr. Balfour Browne.) You are reminded wrongly. The twopenny rate in Bradford was laid a year ago, and since then Bradford has been in Parliament to suspend the sinking fund and the twopenny rate is no longer existing?—Then they have suspended the sinking fund?

21,385. Yes, they have suspended the sinking fund for 2 or 3 or 5 years?—Then this charge does not include the sinking fund in that case.

21,386. In Bradford it did, because this table was based upon the year before?—Yes, but the charge has not been altered, I think.

(Mr. Balfour Browne.) My Lord, I cannot go into the details. What I desired to show was that the comparisons were fallacious, and I have shown some instances in which I think that there is really no comparison in the table at all. I will leave the matter.

(Major-General Scott.) Is your cross-examination, Mr. Balfour Browne, directed to showing that water in London is dear rather than cheap?

(Mr. Balfour Browne.) Certainly, we believe that if a true comparison were made, it would turn out that the

The witness withdrew.

(Mr. Pember.) Several times, my Lord, there has been an allusion to what the statutory control of the companies at the present moment is. I have got a memorandum printed here, which gives the various clauses to which they are subjected under the different Acts of Parliament. It might save your Lordship the trouble of referring to all the Acts separately, if you would like to have it.

(Chairman.) Does it differ from the table we have already had sent to us? The London County Council have been good enough to supply us with a table.

(Mr. Pember.) This is up to date; I do not know whether that is.

(Chairman.) The London County Council are generally up to date.

people in London, similarly situated to the people in the country, were paying far more for water.

(Major-General Scott.) Is not that an argument against purchase?

(Mr. Balfour Browne.) No, I think not.

(Chairman.) You have admitted that any purchaser will have to keep up the present rates.

(Mr. Balfour Browne.) With great respect, I think the advantage of purchase would be that the 4½ million of back dividends which will be paid out of the pockets of the consumers of water in London, if it remains in the companies' hands, will not be paid.

(Chairman.) If the arbitrator disregards that element of value?

(Witness.) Yes.

(Mr. Balfour Browne.) He will discount it to some extent.

(Chairman.) He ought to give the true present value of that future possibility.

(Mr. Balfour Browne.) True, and then in that case, of course, we would get exactly the value of the money we paid, because we would get it annually, having paid for it in a lump sum, but at the same time we would get all the increment of London in the future. A good deal of the cost we say in this particular case, as illustrated by Mr. Hawksley, is due to the bad management of the companies. He says they are supplying 35 gallons per head, and they ought to supply 25. If there was a reduction in that, as your Lordship pointed out, that would be revenue to us; it would not be revenue to the company unless they did it. But the arbitrator would not allow for an economy that they had not made, I think. However, my Lord, I put the point, and I do not want to labour it.

(Witness.) The County Council, I think, have rather intimated that they will not be able to reduce it—that they require even 40 gallons per head.

(Mr. Balfour Browne.) We do not believe you, Mr. Hawksley, with regard to the 25 gallons.

(Witness.) I daresay.

(Mr. Pember.) That is pleasant for you, at all events.

Cross-examined by Lord ROBERT CECIL.

21,387. There is only one question I should like to ask, from the point of view of outside London. You have been asked by my learned friend, Mr. Balfour Browne, whether the provincial corporations do not make a profit, and you have said that they do make a profit, in some cases, out of the water undertaking?—Yes.

21,388. It has been put to you that that profit, as you put it, comes from the water consumers, and goes to the relief of the ratepayers?—Yes.

21,389. Where the water consumers, or some of them, live outside the borough, they would not get any of the relief which goes to the ratepayers inside the borough?—They would not, and they very often have to pay a differential charge, even; they have to pay a higher price than the water consumer in the borough; and, after all, they will not obtain any relief, as you very properly put it.

21,390. So that, supposing there were a purchase by the municipal authority in London, since the area of supply of the water companies extends far beyond the limits of London, there would be a considerable body of water consumers who would pay for the relief of the ratepayers inside London?—Yes.

(Lord Robert Cecil.) Could it be put on the notes?

(Chairman.) I do think it is a little cruel that we should have two statements of what the law is. Cannot the two sides agree?

(Mr. Mellor.) I should have thought you might have agreed upon this without the slightest difficulty.

(Mr. Balfour Browne.) I should have thought so, certainly, my Lord. I have not seen this statement at all.

(Chairman.) It is really too much to ask us to look through these. Surely you ought to agree as to what the result of the existing law is.

(Mr. Pember.) Yes, certainly.

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(Chairman.) The County Council have furnished us with a statement which is somewhere on the notes, but I have no reference to it.

(Mr. Pember.) I do not much think it is on the notes; that is what made me ask.

(Mr. Balfour Browne.) I am sorry to say it is not on the notes. It was sent to the Commission, but it has not been put on the notes.

(Mr. Pember.) I quite, if I may venture to say so, agree with what has fallen from the noble Lord, we ought to agree that the thing is correct, or not.

(Mr. Balfour Browne.) I will tell you what I will do; the document that was sent to the Commission shall be handed to you.

Mr. EDWARD MICHAEL EATON called and examined.

21,391. (Chairman.) Do you agree with the evidence of Mr. Hawksley?—I do.

21,392. You have heard his evidence?—Yes, I have.

21,393. You agree with the whole of it?—I agree with the whole of it.

21,394. Have you anything to add to it—do not give us the same over again?—If you please. There are one or two points arising out of Mr. Hawksley's cross-examination just completed which might be of use if I drew attention to, if you will permit me. The case of Birmingham was alluded to by the learned counsel, Mr. Balfour Browne. He referred to a sum of 25,800*l.*, and he said that had been taken in relief of rates. That, as a fact, was not so. Birmingham is one of the best examples of corporation management and control in this country. After the transfer of the undertaking in the year 1876, they maintained the scale of water rates which the company had had in force down to the year 1881, and then they reduced the water charges. But in 1894, when they approached the construction of the new scheme in Wales, they raised the water rates again, and the sum which Mr. Balfour Browne says has been taken in relief of rates was really taken to a special water fund. It commenced in the year 1893. They took 20,327*l.* to a special water fund; in the following year 12,000*l.*; in the next year 17,700*l.*; then in the year 1897, 25,800*l.*; and for the year ending the 31st March 1898 they took 28,600*l.*—all to the special water fund. It was not taken in relief of the rates at all.

21,395. One moment. They got these extra sums out of the reduced water charges?—No, out of the increased water charge. They increased the water rate in order to provide the fund and pay the interest upon the capital which is accruing in respect of the construction of the works in mid-Wales.

21,396. (Mr. Balfour Browne.) It was not an increase beyond the company's charges, only beyond their own reduced charges?—That was so; that is quite correct. They took it off, and then afterwards they put it on again, but it was not taken in relief of rates. In other towns they have taken large sums of money. In the case of the Leicester Corporation they have taken since the transfer of the undertaking, 71,000*l.* odd in relief of rates, and that has all come out of the pockets of the water consumers, and to a considerable extent it has come out of the pockets of water consumers outside the borough of Leicester; that is to say, they collect the water rate from the outside district, and then they apply it in the relief of their own rates within the borough.

21,397. (Chairman.) Which is very ingenious?—That is very ingenious; you are right, with great respect. Then again, in Leicester they do something else—

(Mr. Pope.) That is one of the acute questions which are arising in many of these boroughs—Bolton and Manchester, for instance—between the water consumer, who is a different individual in many cases, and the ratepayer?

(Witness.) Yes.

(Mr. Pope.) And that would be still more acute if Lord Robert Cecil, or somebody else, broadened the area.

(Lord Robert Cecil.) It is more of a Middlesex point than a Hertfordshire point.

(Chairman.) When the learned counsel have done, Mr. Eaton, perhaps you will continue.

(Mr. Pember.) And I will hand you mine.

(Mr. Balfour Browne.) We can compare and then put on the notes the one that is agreed to.

(Mr. Pope.) And that one will embody the two.

(Mr. Pember.) When it is in its finished shape, we will put that in.

(Chairman.) Mr. Eaton is the next witness tendered to us, but I do not see that he adds anything to what Mr. Hawksley has said. I shall simply ask him whether he agrees with Mr. Hawksley.

(Mr. Pope.) I think with regard to Mr. Eaton, my Lord, he has had a varied experience, and he does desire to say something additional to what Mr. Hawksley has said.

Mr. E. M. Eaton.

See 21,023.

(Witness.) Yes, my Lord. Then some criticism was offered to the construction of the Table 10 which Mr. Hawksley put in, because Edinburgh and Glasgow, and, I believe, Dundee were not included. The reason is that the practice in Scotland, arising, I believe, under statutory enactment, is totally different from that which obtains in England. This kind of thing, to which I have just been drawing your Lordship's attention, cannot arise in Scotland, because there they are not allowed to make a profit and apply it in reduction of general rates. Any profit which is made in any year must be applied to the reduction of the water rates. The only town I know in England where that applies is the city of Liverpool.

21,398. Do you mean that there was a clause of that sort in the Scotch private Bills, by which water companies were purchased in Scotland by corporations? How it arises I do not know. I cannot refer you to the sections of the Acts, but that is the universal practice throughout Scotland, that a profit shall not be made in respect of water to be applied in reduction of general rating.

(Mr. Balfour Browne.) It is true, my Lord, and it was in a Private Bill that became an Act. It exists in certain cases in England too, Worcester being one of them, because there was a case decided.

(Mr. Pope.) Is Worcester one?

(Mr. Balfour Browne.) Yes.

(Mr. Pember.) It is in several Acts.

(Mr. Balfour Browne.) As a fact, the Glasgow rates have been reduced about one half since the companies were purchased.

(Witness.) That is quite right. They proved, owing to the great development of Glasgow, and the development of trade and residential property also, no doubt, that large profits could be and were made, and then in conformity with the authority under the Act that was applied to the reduction of rates, and the rates have been considerably reduced. But your Lordship will see that to introduce the rates charged in towns under such an obligation as that would have entirely vitiated any comparison under the tables which Mr. Hawksley has put in.

21,399. (Mr. De Bock Porter.) Just to refer for one moment to your statement about Birmingham. You say that some 80,000*l.* or 90,000*l.* I think, adding together the three or four years you have spoken of as years of profit, has been used for the benefit of the community which would otherwise have gone into the pockets of the shareholders?—With respect, no, I think not; at any rate it is possible that it might not. By the operation of the Waterworks Clauses Act, when maximum dividends are paid, and a reserve fund in terms of the Waterworks Clauses Act, 1847, has been provided, then all excess of revenue must be applied in reduction of the water rate.

21,400. Yes, but at Birmingham, had the original undertaking been paying its maximum dividend for some time?—It had not been paying it for some time, and I am not quite sure that it was actually paying it at the date of transfer, but it was close upon it, and inevitably in a few years it would have paid its maximum dividend.

21,401. To the extent to which it had not received it, that money which was accumulated and used for the public benefit would have gone to the benefit of private shareholders?—Yes, undoubtedly it would.

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21,402. That was a gain to the municipality?—I do not know; I am not prepared to say that, because they maintained the rates for six or seven years after the transfer.

21,403. Yes, but you say that they lowered the rates for a time?—They lowered the rates in the year 1882, having obtained possession of the undertaking at the beginning of the year 1876.

21,404. To that extent the municipality benefited, did it not?—The municipality benefited, yes, because they created a reserve fund; they applied all the excess water revenue to the creation of a reserve fund.

21,405. And a portion of that revenue which went to this fund would have gone into the pockets of the shareholders until they got their full dividends?—That is so, and then after that they would have created a reserve fund, and then the water rates must have been reduced.

21,406. (Mr. Pember.) So that one ought to consider what the Company would have done if it had been in existence now?—Certainly.

21,407. (Mr. Balfour Browne.) If the Company had carried out the Birmingham Welsh Scheme, there would have been no reserve fund. They would have to raise more capital, and it would have gone to pay the interest upon that, and that very money went to pay the interest on the Welsh Scheme?—After they had raised the rates, yes.

21,408. (Mr. Mellor.) They were obliged to raise the rates in order to get the money. Somebody must pay the interest on the money required for the Welsh Scheme surely?—That is no doubt the case, and that is, to my mind, one of the arguments for these undertakings remaining in the hands of the companies.

21,409. If it had remained in the hands of the Company, the Company would have had to go to Wales just as much as the Corporation?—Quite so, but they would not have raised the rates; the rates would have remained the same.

21,410. They would have had to raise the money in some way or another to go to Wales?—They would, and it would have come out of the pockets of the shareholders, as it invariably does when a company has to go for an extended scheme of water supply. The dividend goes down, and it remains down until gradually by the development of the undertaking the water is utilized and the dividend goes up again.

21,411. (Chairman.) I suppose that nobody can doubt that the London charges will ultimately give a profit upon whatever future reasonable expenditure is made for future increased supply?—No doubt they will. As time goes on and as London extends, and there is a larger and larger revenue derived from the increased population, it is inevitable that a profit must be made.

21,412. Then that profit, as Mr. De Bock Porter has just put to you, will ultimately, if there is a purchase, go into the pockets of the community instead of into the pockets of the shareholders?—That is true; but the community into whose pockets it goes, it is by no means certain, will be the same community out of whose pocket it comes.

21,413. While the water consumers at first will have to provide the sinews of war, as it were—to provide the necessary capital—ultimately there will be a reduction in the water rates?—With great respect, I am inclined to doubt that. The practice of provincial towns at any rate does not lead us to expect that. Birmingham is almost the only case, if not the only case that I know where, as soon as a reasonable profit is made, the water rates are then reduced.

21,414. (Mr. De Bock Porter.) Has not that been the case with Manchester?—There has been, I believe, on two occasions a reduction of the public rate in Manchester, about which, if you will allow me, I will say another word in a moment. I believe that for the coming year, commencing after the 25th March, there will be a further reduction of water rate in Manchester. But the public rate in Manchester is a very curious proceeding indeed. It has been for a great number of years a rate of 3d. in the £, and it has been levied on all classes of property throughout the city. It has brought in practically as much as the whole domestic water supply charged at the rate of 9d. in the £—that is to say, that for the strictly domestic supply of water in Manchester, the consumer pays 9d. in the £ domestic rate, and 3d. in the £ public rate; but then all other properties throughout the city, whether they take water

or whether they do not, have also this 3d. in the £ to pay; so that the result has been in Manchester that the 3d. public rate, levied without distinction on all classes of property, has brought in practically as much revenue as the 9d. domestic rate for a domestic supply of water simply.

21,415. The total charge in Manchester is not more than five per cent., taking both rates together, and there are no extras whatever—the five per cent. covers everything on the rateable value, does it not?—That is true, so far as the domestic consumer is concerned, but it is not true, so far as any other owner or occupier of property is concerned, who does not take a supply of water for domestic purposes, or who has business premises attached to his domestic dwelling-house, separately rated, or rated in excess of his domestic dwelling-house. In that case he pays an additional 3d. in the £ on the total rateable value of such premises.

21,416. (Chairman.) The evidence we have had is that in Manchester the same charges are paid for water as used to be paid to the Company?—Then, if that be the case, my statement just now, that they have been reduced, is wrong. My impression was that they had been reduced, but if that is stated as a fact, then I am wrong as to that.

21,417. (Mr. De Bock Porter.) Just now you said the effect of going for a further supply was to reduce the profits of the undertaking for a time. What is your opinion with reference to the Staines scheme; will that affect the dividends of the water companies, assuming that the whole undertakings are left in their possession?—The Staines, or any equivalent undertaking, I think, would not materially affect the dividends; it would a little, probably, but not to any very great extent—for this important reason: the works at Staines can be carried out in comparatively small instalments, and, therefore, there is only a comparatively limited expenditure of capital from time to time. So soon as an additional 30 million, or 40 million, or 50 million gallons a day becomes necessary, reservoirs to yield that quantity of water can be constructed, and it would not be a serious tax upon the resources of the metropolitan water companies.

21,418. You think that some of the companies may be affected temporarily?—Just to a slight extent. Yes, I think, they probably might.

21,419. (Chairman.) The evidence we had about Manchester, at Question 3284, was this—that the Corporation have gone on charging the same water rate since the purchase, and that they are charging 3½ per cent. on all classes of property on rateable value for domestic purposes; and then there comes the public water rate of 3d. that you have just mentioned?—Yes, there is the public rate of 3d., and that, I believe, is to be reduced from Lady Day next.

21,420. (Mr. Mellor.) Is that rate of 3d. charged to people who have their water by meter?—Yes. It is charged on all rateable property without exception throughout the City.

21,421. (Chairman.) On the owners of property, we were told, not on the occupiers?—Yes, it may be upon the owners; as to that I am not quite certain. I have never been a ratepayer in Manchester.

21,422. You say the 3d. rate produces as much as the water rate?—For domestic purposes, in respect of the 9d. in the £, yes.

21,423. Practically, the rate charged for domestic purposes is doubled by the machinery of this rate?—That is so. It is very often the case that the Manchester rate is quoted as a total of 5 per cent., and then the additional charge of 3d. in the £ on the other property, not taking supplies for domestic purposes, is left out of consideration altogether.

21,424. But that is an advantage, is it not, that the corporation has that power of shuffling the cards, as it were, in that way and distributing the burden upon different shoulders?—With great respect I admire your remark, shuffling the cards; I think it is extremely appropriate; but I do not think there is any advantage in it.

21,425. Each man feels the burden less severely?—I think not.

21,426. It is 3d. on one shoulder and 3d. on the other?—It comes eventually out of one pocket.

21,427. (Mr. Pember.) And is collected on the same day, probably?—It is all collected together.

21,428. (*Chairman.*) The whole point of it is that it comes out of different pockets, I thought. The 3d. comes out of pockets that take no water, and the other 3d. comes out of everybody's pocket that does take water?—I think the net result of it is that it is a very great burden which certainly could not come into operation under a company.

21,429. (*Mr. Mellor.*) It practically comes to this, does it not, that the rate is divided between the owner and the occupier?—In theory that is so; whether it is so in practice I am not quite sure, sir.

(*Mr. Balfour Browne.*) I may say that my learned friend, Mr. Pember, was successful in getting a similar Bill for Liverpool, because the owners of property got the advantage of having the mains, and the rateable value of their property went up because they were protected from fire. He succeeded in getting a similar charge upon the owners of property in Liverpool.

(*Mr. Pember.*) All I can say in regard to that is that "our pleasant vices make instruments to plague us."

21,430. (*Mr. Balfour Browne.*) The suggestion is that the pipes being there the protection from fire is of the greatest possible advantage?—The pipes are there, and the protection from fire is there in the hands of a company exactly the same as in the hands of a corporation. Nothing is paid for water taken for fire purposes in the hands of a company; we are under obligation in the Waterworks Clauses Act—

21,431. The owners of property do not pay for it, that is all the difference?—It is paid for out of the pockets of the shareholders.

21,432. It is paid for out of the pockets of the consumers of water in aid of the person who owns the property that gets the protection?—Precisely; the people who take the water are the people whose property is there to be protected, and the pipes and the hydrants are laid down and kept charged with water for that purpose.

(*Chairman.*) Have you any question to put in cross-examination to Mr. Eaton?

(*Mr. Balfour Browne.*) No, my Lord.

(*Mr. Pember.*) Mr. Eaton, I think, had some facts which he wished to put before you about the Thames which, I think, have not been before you.

21,433. (*Chairman to Witness.*) About what?—Does your Lordship desire to have any information as to the mode of calculating the yield of the Thames valley?

21,434. Do you mean the rainfall of the Thames?—The rainfall.

21,435. That was all given to the Balfour Commission, and we have got that before us; do you differ from the evidence given to the Balfour Commission?—No, except this—I think perhaps the yield, as set out in the Balfour Commission, for three consecutive dry years may possibly be a trifle in excess of the true figure. I believe that there will not be the slightest difficulty in getting a yield of 1,000 million gallons a day throughout the whole of three consecutive dry years.

21,436. You say the Balfour Commission state—I do not carry the figure in my memory?—They make the figure a little more than that; I think it is nearer 1,100 instead of 1,000.

21,437. You mean that the rainfall in the Thames catchment basin amounts, you say, to 1,000 million gallons per day?—Throughout that dry period.

21,438. The driest period—

(*Mr. Pember.*) He gives the available rainfall which comes into the river.

(*Witness.*) Yes, the amount that can be usefully stored and distributed.

21,439. (*Chairman.*) You mean that amount must get into the Thames?—That amount does get into the Thames, and subject to any minimum quantity which is fixed (and which I venture to say, in my opinion, would be ample if placed at 100 million gallons a day) to flow over Teddington Weir, the rest of the 900 millions per day is available for the supply of London.

21,440. Can you give us an idea of what sort of sized stream the Thames would be below the lowest lock if only 100 million gallons a day come over that lock?—Your Lordship, no doubt, knows the Thames below Teddington.

21,441. Slightly, yes?—Of course, the consideration of the subject is very much modified by the condition of the tide—

21,442. That is what I am supposing?—If the tide has gone out completely so that there is a free fall for the water—I presume your Lordship refers to that?

21,443. Yes, I do refer to that?—With 100 million gallons a day going down, I imagine that there would be an ample supply of water there to float any vessel, that is, any barge or craft that would be likely to want to get up there, across the whole width of the Thames, as you see it at that point.

21,444. (*Mr. Mellor.*) Any steamer?—Only steamers such as are in the habit of going up to Teddington Weir, and pass the lock. Anything that could pass the lock would pass freely up the bed of the river. But it is necessary to remind your Lordship that the condition of the river now is materially modified by the Richmond Weir. The questions put to Mr. Hawksley in cross-examination as to the deposit of silt in that upper part of the river wants, I think, this explanation: The silt will be deposited when the water attains a certain state of quiescence; of course it will be set in motion again the moment that water attains the same velocity that it had prior to the moment of deposit, and that does not depend now upon the falling of the tide all the way down the river, but upon the working of the Richmond Weir. The distance is very much shortened. With regard to the whole bed of the river below Richmond Weir, that is controllable by the Richmond Weir; water can be ponded up there and then sent out in any way that the Conservators think fit down the bed of the river.

21,445. (*Chairman.*) You mean that you can pound the water at Richmond Weir during high tide and send it down at low tide?—Yes. That is done now, and during the whole of the dry weather of this year, so far as my information goes, there has never been one single complaint as to the state of the river, either as regards deposit of silt or as regards the quantity of water in the river for any purpose for which the river is required to be used.

21,446. (*Mr. Mellor.*) Have you heard any other complaint with regard to the state of the Thames when the water was low?—I have never heard of any.

21,447. Owing to the small quantity of water coming down?—No, I have never heard of any. There has nothing been suggested in my hearing at all.

21,448. (*Chairman.*) If I may refer to my own experience, I remember years ago, when I was young enough to go boating on the Thames, the condition of the Thames at Eel Pie Island in the summer was the most lamentable thing conceivable; there was hardly any water at all, and you could not get up in an ordinary sculling boat?—Quite true, but I believe that is materially modified for the better now.

21,449. By Richmond Weir?—Yes, I presume it is Richmond Weir.

21,450. (*Mr. Mellor.*) What else could there be?—I think a scouring out of the bed of the river. I think, of recent years, there has been a certain amount of scouring out of the bed of the river.

21,451. That would not increase the quantity of water?—It would, no doubt, be the Richmond Weir that has created the improvement there. Certain it is, that there has been no complaint whatever as to the state of the river; and everybody at Richmond is more than satisfied with the condition of the river now since the construction of the Richmond Weir. I have relatives living at Richmond, and I have heard it stated that the value of property has gone up since the Richmond Weir has been constructed, the condition of the river has been so much improved.

21,452. (*Mr. De Bock Porter.*) But you hardly think it would improve the condition of the river to bring down the 200 million gallons' limit which we have heard so much about, to 100 million gallons, do you?—I do, certainly. I think it is a waste of the resources of the Thames to allow 200 million gallons a day to go over Teddington Weir. It is not wanted; and therefore, if it is not wanted, it is better applied to some useful purpose.

(*Sir John Dorington.*) It got down to as low as 42 millions one day this year, I believe. I do not know, I am sure, quite what the figure was. It has fallen considerably, I believe, below 100 millions; and if that limit were adhered to, it is quite certain, there having been no complaint with the low figure you name, there would not be any complaint with the much larger quantity.

Mr. E. M.
Eaton.
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21,453. (*Chairman.*) I do not think the 200-million limit is at present in force by law?—No, it is not; there is no limitation whatever. The companies now, to the extent of their statutory powers, with the exception of the Southwark and Vauxhall Company and the Staines Committee, are entitled to take their statutory quantities of water, whatever the condition of the river may be.

21,454. (*Major-General Scott.*) Do you say that the working of the Richmond Weir tends to clear the silt out of the river?—I do, certainly.

21,455. How does that operate?—It operates in this way: when the tide has fallen to a certain extent, the tide falling more or less slowly, then the water is discharged from the Richmond Weir; that exercises a flushing influence on the bed of the river,

21,456. (*Mr. Balfour Browne.*) The same water passed down before?—The same water passed down; but it passed down in a different way—it passed down at a different time, and in different quantity.

21,457. (*Chairman.*) You say you can nurse the 100 million gallons going over Teddington Weir at Richmond Weir till the period of low-tide, when you can discharge them with effect?—Certainly you can. You can do this: you can pond up, by means of the Richmond Weir, the tidal water which now goes a certain height up to Teddington Weir.

The witness withdrew.

(*Chairman.*) Before we rise to-day, I am anxious to say, and I think that all the Commissioners are of the same opinion, that this evidence is really being protracted unnecessarily. I do trust the learned Counsel will bring their witnesses within a reasonable compass. We think that four days more ought to conclude this inquiry.

(*Mr. Balfour Browne.*) My Lord, I am told that to-morrow, probably, the witnesses called will be chemists; I do not know how far we are to go into the question of the quality of the water.

(*Chairman.*) I think that the mere quality of the water is totally irrelevant to our inquiry.

(*Mr. Balfour Browne.*) So did I.

(*Mr. Pope.*) Clearly, my Lord, but I do not think the object of calling any chemist is with that object at all. One of the points of inquiry here is the question of the necessity to take flood water, in other words, the question of storage that must be provided, and that is dependent upon the period when you can take that water into the reservoir.

(*Chairman.*) I agree that is true.

(*Mr. Pope.*) To that extent we propose to direct the evidence.

(*Chairman.*) Very well.

(*Mr. Balfour Browne.*) My Lord, I cannot possibly be here to-morrow; if anything very important should arise, perhaps they would give me an opportunity of asking a question upon another occasion.

(*Mr. Pope.*) We shall not object to your asking questions at any time.

(*Mr. Balfour Browne.*) Thank you; I am much obliged.

(*Chairman.*) If your scientific witnesses could throw any light upon the question of control as connected with filtration, it would be valuable. We should be extremely glad to know, for instance, whether the system of filtration could be improved so as to exclude bacteria and to make the water perfectly innocuous.

(*Mr. Pope.*) I think your Lordship will find they have gone very carefully into that.

(*Chairman.*) We really must ask you to expedite the matter, and to apply your evidence directly to the points we have got to consider.

(*Mr. Pope.*) I think, at all events, the Secretary of the Commission has certainly had from Mr. Hollams a sort of indication of what we should propose to do. As soon as this question of flood water, and so on, is disposed of, we propose entirely to confine our evidence to individual companies, and to the subjects analagous to what your Lordships mentioned at the termination of the last sitting, namely, the question of the conduct of the companies, and the matters which have been

21,458. I see; the Richmond Weir lets the tide go over it?—The excess water passes over. Then you lift the shuttles; and then away goes the water scouring down the bed of the river. At the same time it creates a velocity in the portion of the stream between the Richmond Weir and the Teddington Weir.

21,459. (*Mr. Mellor.*) That is to say, you flush the bed of the river?—Yes. A homely illustration is that of the flushing-tank of a sewer; it is precisely the same thing. I do not put it forward as any parallel; but it is the operation of the same means of flushing.

21,460. (*Chairman.*) I do not think, Mr. Eaton, that there is anything more that I want to ask you?—If your Lordship pleases. One point I might venture to express an opinion on, if you will allow me, is as to the propriety of fixing the gauging station for all this water, whatever it may be that is sent down the river, at Teddington Weir, and not having it, as now, scattered in two or three places. It is of great importance, to my mind, that the gauging station should be below the point of intake.

21,460a. Certainly?—And that the Teddington Weir should be re-constructed in order that it should be made into a proper gauging weir—that it should be made water-tight and the gauging apparatus fixed there.

(*Chairman.*) Thank you.

charged against them, as a reason why they should be purchased.

(*Chairman.*) Do remember that, strictly speaking, our only subject of inquiry is the financial expediency of purchase, and if you can throw light upon that you can assist us.

(*Mr. Pope.*) If your Lordship will forgive me, I felt that very strongly, and I have been considering during the vacation what we should have to do. It seems to me that a great deal of this inquiry has wandered —

(*Chairman.*) A good deal. I have done my best to keep it within bounds, but I find it very difficult.

(*Mr. Pember.*) We ought to say, in our own justification, my Lord, that the erratic character of the inquiry began before the companies came in.

(*Chairman.*) I do not want to blame either side.

(*Mr. Pope.*) We do not blame anybody.

(*Chairman.*) This question of Wales and the Staines storage is quite a collateral matter, and it seems to me that you are throwing sticks into your own wheels. Is purchase financially expedient? That partly depends upon whether you have to spend a great deal of money in going to Wales; if you have to spend much less money in making storage reservoirs, purchase becomes much easier and more expedient.

(*Mr. Pember.*) If they will not use Staines and will go to Wales it will be expensive to them, and it will be cheap to us.

(*Chairman.*) That depends upon who the purchaser is, which is another question.

(*Mr. Pope.*) Looking at the reference to the Commission, what seems to me to be pointed out by the latter part of the phrase is some question of this kind: Assume that at some period combined action is necessary for the purpose of obtaining the further supply, could that be done, by the individual companies, or is it, as my friend would contend, just the subject matter which a large body ought to undertake as a capital question. That is the point to which, by-and-by, I hope, we shall be able to direct your Lordship's attention—whether combination amongst the companies, as in the Staines Reservoirs case, might not be as good a solution of the difficulty of the provision of a future supply, whatever its cost, as the purchase by a public authority.

(*Chairman.*) Do you say that is within the third head of the reference?

(*Mr. Pope.*) I think so.

(*Chairman.*) I will look at it again with that view. I thought we had exhausted and finished with the third head in what we did in November and December, and that all that was left was the financial expediency of purchase, and if so, by whom.

(*Mr. Pope.*) Do you mean the financial expediency of purchase in the interest of the ratepayer and of the consumer, and of the future supply of London?

(*Chairman.*) Yes, you must take into account the future supply of London. The future supply of London may make Wales necessary; if so, whatever the cost of Wales, you must go there.

(*Mr. Pope.*) Quite so. Then it may be a question of whether the individual companies are strong enough

to undertake such an expenditure, which might be an argument, and it seems to me to be the only argument, if I may say so, which is left in favour of purchase. 16 Jan.'99.

(*Mr. Pember.*) Or of amalgamation.

(*Mr. Pope.*) Of the financial expediency of purchase as far as the ratepayer and consumer are concerned.

(*Chairman.*) At any rate, we feel that the inquiry has gone on certainly very long, and we are extremely anxious to conclude it.

[Adjourned to to-morrow at 12 o'clock.]

FORTY-FOURTH DAY.

Tuesday, January 17th, 1899.

17 Jan.'99.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
Sir JOHN EDWARD DORINGTON, Bart., M.P.
Sir GEORGE BARGLAY BRUCE, Knt., C.E.

ALFRED DE BOCK PORTER, Esq., C.B.
Major-General ALEXANDER DE COUROY SCOTT, R.E.
ROBERT LEWIS, Esq.

OECIL OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.
Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Bickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

21,461. (*Mr. Pember.*) I think, my Lord, it might be as well if I just put straight what seemed to be rather a misconception of law yesterday. We understood my learned friend to say that in consequence of legislation in 1852, there had been constant supply in the Metropolis from that time down to now—I mean, that it had been as a matter of law. That is true in one sense, but it is untrue in another; and the untrue is the practical way of looking at it. The Act of 1852, chapter 84, by section 15, prescribes that—"After the expiration of five years from this Act"—that would be in 1857—"every Company shall, subject to the provisions of their special Act provide"—I leave out unnecessary words—"a constant supply of pure and wholesome water sufficient for the domestic use of the inhabitants of all houses supplied by such company, at such pressure as will reach the top story," and so on. There is a proviso that "no company shall be bound to provide a constant supply of water to any district main until four-fifths of the owners or occupiers of the houses on such main shall, by writing under their hands, have required such company to provide such supply, nor even upon such requisition in case it can be shown by any company objecting to the same that more than one-fifth of the houses on such main are not supplied with pipes, cocks"—and all sorts of things are mentioned—"constructed according to the regulations prescribed by the special Act or by this Act, or which any company, with the approval of the Board of Trade, may from time to time make in that behalf." Then there are certain other administrative parts of the section which I need not read. But just see what an unworkable section that was as a matter of fact. They

were not bound to do it unless four-fifths asked, and then there would have to be an inquisition on all houses on a particular main to see whether one-fifth was properly supplied with all kinds of various fittings, and then there were to be further regulations put into force such as the Board of Trade might approve, and then there are various other things with which I do not trouble you. Suffice it, I think, to say that I have shown that that was an unworkable section which never was put into operation. Your Lordship will excuse me for asking you to mark this, that the initiative in that case was not to be taken by the companies; it was to be taken by these four-fifths. Now that was never taken by the four-fifths of the consumers. Now, that being found to be a perfectly inoperative (and I do not wonder at it) and also unworkable section, in 1871 it was repealed, and this constant supply section, section 7, was passed instead: "Subject to the provisions of this Act, every company may, and from and after the expiration of eight months from the passing of this Act, every company shall, when required so to do, in the manner directed by this Act, provide and keep throughout their water limits, or throughout such parts of such limits as they may be required in manner aforesaid, a constant supply of pure and wholesome water sufficient for the domestic purposes of the inhabitants within such water limits constantly laid on at such pressure as will make such water reach the top story of the highest houses within such water limits (but not exceeding the level prescribed by the special Act) of such company (which supply is in this Act referred to as a 'constant supply'); and every such company shall, subject to the provisions of the special Act as

17 Jan. '99 " the same are amended by this Act, give and continue " to give to such inhabitants a constant supply for " domestic purposes in manner prescribed." Then comes the section which deals with the form of application ; because you will recollect that the section I have just read says that it shall be done when required in manner prescribed by the Act, and the section for that purpose is section 8, which is as follows : " At any " time after the expiration of six months from the " passing of this Act the metropolitan authority shall, " whenever they are of opinion that there should be " in any district a constant supply make application " to the company within the water limits in which " such district is situate, requiring a constant supply " in such district, and any company may without any " such application propose to the metropolitan authority to give a constant supply in any district." When the application is made, there may be an appeal to the Board of Trade for or against it. Your Lordship will notice the extraordinary simplicity of the legislation of 1871, as compared with that of 1852—the legislation of 1871 merely requiring that they should do it on application by the metropolitan authority.

(*Mr. Mellor.*) What was the metropolitan authority? Was it a vestry or the Metropolitan Board of Works?

(*Mr. Pember.*) There is a schedule to the Act. For the metropolis except the City of London, the Metropolitan Board of Works; for the City of London, of course, the Corporation. Then, I am told, I had better look at section 26. Then there is a notice relating to constant supply to be published in the "London Gazette"; and the company may issue notices to the owners and occupiers to provide the prescribed fittings; and then they have to do it, and in case of default the company may do it. Then, section 17, as I think we most of us know who are familiar with these things, says that—"Every company shall within six months " after the passing of this Act make regulations for " the purpose for which regulations may be made " under the authority of section 26 of the Metropolitan " Water Act, 1852," which I have just read to you, " and the provisions of that section shall apply also " to the preventing of undue consumption or contamination of water." Then, these have to be brought before the Board of Trade—now it is the Local Government Board—and have to be approved by them, or they may be repealed or altered by the Local Government Board under certain subsequent sections with which we are all familiar. So that it really comes to this. Although in theory, under that section 15, there may have been constant supply between 1852 and 1871, there never was, because no application was made under an extremely cumbersome and difficult section. Therefore, we are not in default that we did not begin constant supply until 1871, because we were never asked; and from 1871 onwards a much simpler method of treatment is introduced by the legislation of that year, and to that legislation we have been adhering ever since, and gradually, as I pointed out during that period from 1871 down to now, we have given constant supply amongst us whenever applied to; and we now supply constantly 89 per cent. of that whole. Some of the companies did it themselves, and, notably, as I know, the East London, which is one of the companies that I am in the habit of appearing for, and the Kent too did it without any application at all; because, as you will remember, the section as I read it to you, said that the companies may at their own initiative do it, and they did it.

(*Chairman.*) Yes. Have the applications requiring constant supply been made since 1871?

(*Mr. Pember.*) Yes, they have.

(*Chairman.*) For the whole district?

(*Mr. Pember.*) No, no. They have been made in a number of instances, which, taken in connexion with the number of instances in which certain of the companies have done it without any application at all, have brought about the application of constant supply to 89 per cent. of the consumers in the County of London.

(*Sir John Dorington.*) Of all the eight companies?

(*Mr. Pember.*) All the eight companies.

(*Chairman.*) But for the remaining 11 per cent. there are applications requiring constant supply that have not yet been complied with.

(*Mr. Pember.*) I think I may assume that. Did I understand your Lordship to say there are applications for constant supply which have not yet been made?

(*Chairman.*) Which have not yet been complied with I said.

(*Mr. Pember.*) I beg your pardon; not yet been made, as I understand it; but if any have been made and have not yet been complied with, you may depend upon it that there has been no delay.

(*Mr. Mellor.*) I should like to know by whom were those applications made latterly?

(*Mr. Pember.*) By the London County Council since they came into existence.

(*Mr. Mellor.*) Were the applications in a form in which it was suggested that in some particular parish or some particular district constant supply was required?

(*Mr. Pember.*) Yes, and they have to be published in the "Gazette" as I read to you. Have I made it clear, my Lord, do you think?

(*Chairman.*) Yes I think so.

(*Mr. Pope.*) Since the Metropolitan Board of Works became the London County Council, it may be taken, my Lord, that the London County Council has given whatever notice it can give in order to compel a constant supply. Their policy has been constant supply, undoubtedly.

(*Chairman.*) Yes, but I understand that of the 11 per cent. applications have not been made.

(*Mr. Pope.*) With regard to some of them, I daresay not.

(*Sir John Dorington.*) That is to say, they have not covered the whole area for which they might have applied.

(*Mr. Pember.*) I will find out for you exactly how that is, my Lord. Of course it only refers to 11 out of the whole hundred; but I will find out for you whether applications with regard to those 11 per cent. have been made and what the state of things is with regard to those applications, and then you will have it all before you.

(*Mr. Littler.*) I should like to say on behalf of the Kent Company that we started a constant supply on our own initiative.

(*Mr. Pember.*) I ventured to say so while my learned friend was away.

(*Mr. Littler.*) We have carried it out thoroughly and there is no part of our district that is not constantly supplied except a little portion on the top of Shooter's Hill, which from the levels it is impracticable to supply constantly. The whole of our area is supplied constantly, and that has been done from time to time at our own initiative. There is one other thing I should like to say, my Lord, as to its being done gradually, that it is necessary it should be done gradually for a great many reasons; amongst others, that unless an area is defined, it will be almost impossible to carry out the work without much greater inconvenience to those who are supplied. It has to be done in areas, and the London County Council have been perfectly reasonable about that. They have always recognized that and they have served notices for given areas from time to time.

(*Major-General Scott.*) There is one question I should like to ask you, Mr. Pember, while you are on this subject. You are aware, of course, till the Act of 1897 was passed, the Metropolis Water Act of 1871 did not apply to the districts outside the metropolis?

(*Mr. Pember.*) That is so.

(*Major-General Scott.*) At any rate it did not apply to any district outside those which were scheduled in that Act.

(*Mr. Pember.*) Quite so.

(*Major-General Scott.*) And when that 1897 Act was passed, the Metropolis Water Act, 1871, of course came into force. But I think before that time, in certain districts outside the metropolis, a constant supply had been introduced.

(*Mr. Pope.*) Yes.

(*Major-General Scott.*) Now, would the 1871 Act apply to those places outside, since notices under that Act were not sent out and the arrangements in that Act had not been complied with?

(*Mr. Pember.*) Let me see that I quite understand what you mean, and I will consider it and answer you; but I could not answer at the moment. Do you mean to suggest this, that, if those constant supplies outside

what we will call for this purpose the metropolitan area have been given by the companies, they have been, so to speak, voluntarily given, and not in obedience to this statute?

(Major-General Scott.) Yes.

(Mr. Pember.) Having been so voluntarily given, we will say, do the consumers get the benefit, or do the company get the benefit, on the other hand, of any of the regulations as to constant supply, or its intermission, or anything of that kind, which the Act of 1871 might be supposed to give?

(Major-General Scott.) That is it.

(Mr. Pember.) I will consider that and, if you will allow me, answer it later.

(Mr. Littler.) I may answer your question as regards Kent. We, by our subsequent Act of 1875, extended the 1871 Act to the whole of our area. Therefore, although the 1871 Act only applies to the metropolis, we have by our own private legislation extended the public Act and made it apply to the whole of our district, so that we are under the whole of the obligations with regard to the 1871 Act, outside the metropolis as well as in.

(Mr. Mellor.) I understand you to say that the 1871 Act only applies now to the metropolis.

(Mr. Littler.) The 1871 Act only applies to the metropolis, unless it has been extended. I cannot tell you about other companies—whether they have extended it—but I only answer for my own company, the Kent, that we have made it extend outside the metropolis.

(Mr. Mellor.) That is to say you voluntarily extended the supply.

(Mr. Littler.) Voluntarily extended the powers and obligations—the powers, on the one hand, to require constant supply; and, on the other hand, to give it and to make all the regulations.

(Mr. Mellor.) As I understand you there is no law applying to the whole of your district, but only to the metropolitan part of it.

(Mr. Littler.) The 1871 Act would only have applied to that. Then, when we, in 1875, extended that by our private Act, we made that apply to the whole of our district—in point of fact, enacted it as to our whole district, as though it had been in the 1871 Act.

(Chairman.) By the 1897 Act, it has been extended to all the districts of all the companies.

(Mr. Littler.) Certainly, my Lord since, 1897 no question arises. It has been extended all over, and constant applications are being made now, under the 1897 Act.

(Mr. Pember.) I cannot help thinking that, as the 1897 Act has done what your Lordship very properly says it has done, it is rather an intellectual exertion to see what answers I should give to the question asked me by Major-General Scott. But I think I ought to say this: It strikes me, off-hand, looking at section 15 of the Act of 1852, which applied to the companies' districts both in and outside the metropolitan area, then, looking to the Act of 1871, which dealt only with the metropolitan area, it is quite possible—I do not pledge myself—but it is quite possible, with regard to the bits of the companies' districts outside the metropolitan area, they were not touched by the legislation of 1871, and that therefore the legislation of 1852 may still inure as regards them. But, whether that is true or not, I think that the practical value of the question—if General Scott does not mind my saying so—is more or less got rid of by the legislation of 1897, to which the noble Lord in the Chair has called attention.

(Mr. Pope.) Perhaps it might be useful that I should read the third section of the Act of 1897; it is very explicit.

(Chairman.) I have got it before me.

(Mr. Pope.) It is a very explicit section.

(Chairman.) Yes; but that will not, so to speak, cover with statutory rights and obligations constant supplies that had been given in the interval between 1871 and 1897.

(Mr. Pope.) No, it would leave unprovided for the past action of the companies with regard to supply.

(Chairman.) Yes.

(Mr. H. L. Cripps.) May I just say one word upon that point, because, unfortunately, neither of the learned counsel representing the County Council are able to be here to-day?

(Chairman.) Yes, that is a loss to us.

(Mr. H. L. Cripps.) Your Lordship will see that the facts about constant supply were offered, and to some extent discussed, before you on December 13th, 1897, at Question 618. But I think, perhaps, I might shorten this controversy—if I may so describe it—by just explaining this: Your Lordship will find in the Twenty-seventh Annual Report of the Local Government Board that the percentage of houses on constant supply on 31st December 1897 was 89. That is given at page 196 of the Twenty-seventh Annual Report. In 1888, when the Council were first constituted, the number of houses on the constant supply was given in the Water Examiner's Report at 53 per cent.; and the percentage has been raised, since the constitution of the London County Council, from 53 per cent. to 89 per cent. So far as the London County Council are concerned, they have always been very satisfactorily met by the London water companies in all cases where applications have been made to the companies to increase the area of constant supply. The Council has recognised, of course, the impossibility of making any wholesale requisitions, but their requisitions have been complied with to such an extent that the number of houses have been raised from 53 per cent. to 89 per cent.

(Mr. Mellor.) Eighty-nine per cent. throughout what area, Mr. Cripps?

(Mr. H. L. Cripps.) The county of London.

(Mr. Mellor.) The administrative county of London?

(Mr. H. L. Cripps.) The administrative county of London. According to the Local Government Board, 27th Annual Report, 1897-8, the percentage of houses in the county of London on constant supply is 89.

(Chairman.) Not throughout the area of all the companies?

(Mr. H. L. Cripps.) Not throughout the area of all the companies.

(Major-General Scott.) I doubt if you are quite right there, Mr. Cripps.

(Mr. H. L. Cripps.) Is it your report.

(Major-General Scott.) It depends upon what the companies return. I think that they return—however, they could answer that best—for their whole area.

(Mr. Pember.) Whether it is so or not, I merely rose to state the law, and I have no quarrel with the London County Council in this matter, and they say they have no quarrel with me; but what has this got to do with what is inside the Statute?

(Mr. Mellor.) We want to know what the law is; that is all. Perhaps you will answer the question, if Mr. Cripps will excuse my putting it to you. I want to know this: Does the 1897 Act cover merely the administrative county of London, or does it cover the whole water area?

(Mr. Pember.) It covers the whole water area.

(Mr. Pope.) If you look at the Act you will see it makes it applicable to the whole area of the London water companies.

(Chairman.) According to Mr. Cripps, the 89 per cent. that has got constant supply is only within the administrative county of London.

(Mr. Pember.) That, the Major-General ventures to doubt, and, personally, I venture to doubt it myself, but I would not think of attempting to guide your mind one way or the other, but if that is an interesting fact to you, as I daresay it may be, I will take care to have it got out. But may I be permitted to say that that has nothing whatever to do with what I have been doing this morning, which was merely to state the law.

(Mr. H. L. Cripps.) I think the question arose in this way. It was a sort of criticism upon what Mr. Balfour Browne had said, and I think you will find that the law was stated as long ago as December 13th in last year.

(Mr. Pember.) How is that relevant, may I venture to ask? Suppose it has been stated twenty times over, I have stated it for the twenty-first time, that is all.

(Mr. H. L. Cripps.) Mr. Balfour Browne was asked the question by one of the Commissioners, and he was quite right in what he said, that under the law the

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17 Jan. '99. companies had power to provide constant supply as long ago as the 1852 Act, and again in 1871.

(Mr. Pember.) I have read the Statute. Cannot we leave it there?

(Mr. H. L. Cripps.) The Statute is perfectly clear.

(Mr. Pember.) That is what I venture to think, and, therefore, we do not want you to state it again.

(Mr. H. L. Cripps.) They have given a constant supply, and, under certain circumstances, they are compelled to.

(Mr. Pember.) I see that the phrase in Major-General Scott's Report is, "In the following statement the percentage of houses to which the constant system has been applied in each company's district are compared"—and then, I see, it is 89 on 30th November 1898.

(Chairman.) Where do you find those words?

(Mr. Pember.) I find those words on page 2 of the copy I have got, my Lord, of the Report of the condition of the Metropolitan Water Supply during the month of November 1898 by the Water Examiner appointed under the Metropolis Water Act, 1871.

(Mr. Pope.) At the top of page 2, you will observe a table which gives the percentage in the districts of every company separately.

(Mr. H. L. Cripps.) I have just handed in the Report, my Lord. You will see how the matter stands from there.

(Chairman.) I do not find those words. This is not page 2, but page 196.

(Mr. Pember.) Here is proof positive, I think, although it is indirect. I see, in the Water Examiner's Report, the amount given for Lambeth is 68 per cent.

(Chairman.) I have got it at 65.

(Mr. Pope.) 30th November 1898, the next column your Lordship will see.

(Mr. Pember.) Are you not looking at the 31st of December 1897?

(Chairman.) Yes.

(Mr. Pember.) Then, if you look at the next column, you will see 30th November 1898.

(Chairman.) I have got the wrong report.

(Mr. Pope.) Perhaps your Lordship will allow me to hand you this one. It contains it. That is the last, I am informed.

(Mr. Pember.) Will your Lordship kindly turn to page 2, and you will see Lambeth is put down as having had 65 per cent. in 1897, and 68 per cent. in November 1898. Now, granted that this which I am going to read you now is an *ex parte* statement, I see that in

their last Report of their accounts, and all the rest of it, which is made on the 30th September 1898, and signed by their chairman (of course, I admit it is *ex parte*, but I think you will see that I am justified in reading it). "Constant supply," say the Lambeth, "has been laid on to 1,722 houses during the half-year, and is now given to 73,484 out of a total of 110,819 supplies, being"—mark this—"66·3 per cent. of the whole number, or 88·3 per cent. of the houses supplied in the administrative county of London." So that, you see, in September—and I suppose they have added some since—they had 66 per cent. of what could only refer to the whole of their district and this 68. Therefore, this must refer to the whole of their district, because they say 88·3 per cent. is the number of houses which they supplied in the administrative county of London. I think there is no doubt about it.

(Mr. Mellor.) I suppose we may assume that the authority outside the administrative county of London is the county council for Middlesex, or any other county which is concerned?

(Mr. Pember.) I should think you may assume that. Yes, it says so in the Act of 1897.

(Mr. H. L. Cripps.) Section 3.

(Mr. Pember.) In the case of a county borough, it is the corporation. You will find that in section 5.

(Chairman.) It seems, according to Major-General Scott himself, that the 68 per cent. applies to the whole district, and not only to the district within the administrative county of London.

(Mr. H. L. Cripps.) General Scott will know, but I was informed it was only in the administrative county of London. I do not know that it is very material.

(Mr. Pember.) I do not think we need waste any more time on this point.

(Chairman.) If you look at the report of November 1898, and at the details of the metropolis water supply, you will see in the columns there that the return obviously refers to the whole district.

(Mr. Pope.) Yes.

(Mr. Pember.) I think those figures of mine about Lambeth are an indirect but a perfectly corroborative proof.

(Major-General Scott.) If you look at the monthly reports, Mr. Pember, you will see that the companies' return under the heading "Number of Houses on Constant Supply," with a reference to their district.

(Mr. Pember.) Quite so. I have no doubt about it.

(Major-General Scott.) And it is compiled from that.

(Mr. Pember.) Yes, I have no doubt about it. I require no persuasion. I am perfectly certain it is so.

Sir W.
Crookes.

Sir WILLIAM CROOKES called and examined.

21,462. (Chairman.) Sir William Crookes, you have been concerned in the systematic chemical examination of London water since what year?—Since the year 1881.

21,463. You were associated in that year with Dr. Tidy and Dr. Odling?—I was.

21,464. And from August 1894 you have carried on the work with Professor Dewar?—After Dr. Odling's retirement, Professor Dewar took his place.

21,465. How far back do your bacteriological examinations date?—From October 1894. It was a stipulation of Professor Dewar when he came into this matter, that he should carry out certain recommendations of the Balfour Commission, and examine the water bacteriologically.

21,466. How often do you make these examinations? Every day for each company, and sometimes several times a day for each company.

21,467. Where do you take your samples from?—The clear water wells of the filtering works of the companies, and stand-pipes in different districts, and the raw Thames water, and the New River water as well.

21,468. (Mr. Pember.) And the Lea, I suppose?—And the Lea.

21,469. (Chairman.) How many of these examinations a-day have you made?—On an average, 10 a-day.

21,470. The expenses of your examinations are defrayed by the companies. I believe?—They are. But

it has always been a rule—it was stipulated by Dr. Tidy and Dr. Odling, and Professor Dewar afterwards, that we should be absolutely independent in what we said. The companies know nothing whatever of what we are going to report, until they see it in print. They have never objected to any request that we have made. Whenever we have said we ought to have more powers or more material at our disposal for carrying on the work, they have never made any objection, but have always acceded to our requests.

21,471. Then, in point of fact, have you regarded yourselves as independent of the companies?—Quite independent.

21,472. Acting in the interest of the consumer, but not in the interest of the company?—In the interest of the consumers.

21,473. It is no part of our province to go into chemical details, but just tell us generally whether the chemical character of filtered Thames water has improved?—It has very much improved of late years since we have been carrying on these examinations.

21,474. Perhaps you will just give us figures showing the improvement since 1870?—May I put in a diagram. I think it explains matters more clearly than anything I could say. I have preferred to put it in the form of a diagram.

(The Witness handed in Diagram A. See "Maps, Plans, and Diagrams.")

21,475. What does this diagram show?—The lower portion shows the flow over Teddington Weir from the first date 1883 taken from the Thames Conservancy Reports.

21,476. (*Sir George Bruce.*) Which line is that?—These black lines show the number of million gallons flowing over Teddington Weir. This black line is the 2,000 million gallons per day. This is 2,300 million gallons which I understand is to be taken as flood water. Flood water, therefore, is represented by this. These are all the floods in the Thames from that date.

21,477. (*Chairman.*) That is, floods exceeding a flow of 2,300 million gallons over Teddington Weir?—Yes.

21,478. (*Major-General Scott.*) I should call a flood anything exceeding the average flow of the river, should not you?—I took the dicta of the engineers who seemed to consider that anything over 2,000 million gallons should be flood. The scale is at the other side, one million gallons, two million gallons, and so on.

21,479. (*Sir George Bruce.*) What is this red line?—Those are the microbes. May I now explain? The top portion of the diagram represents the organic impurity and the brown colour in the raw Thames water. It shows that the colour goes *part passu* with the flood. Where the flood is high there is a little extra colour.

21,480. Does that mean extra microbes?—No, not extra microbes. I have another diagram to show that. This is the average of the whole examination—the mean average of the colour of the Thames.

21,481. (*Chairman.*) There are different colours here, darker and lighter, do they all mean the same thing?—They all mean the same thing; the dark ones represent flood; you see I have one, two, three dark ones here.

21,482. That means that in these floods that exceed 2,000 million gallons the colour is correspondingly darker?—The brown colour is correspondingly darker.

21,483. (*Major-General Scott.*) The measurement of colour is taken with filtered water, is it not?—Yes, it is in filtered water.

21,484. (*Chairman.*) I thought you said this was raw Thames water?—If I said raw Thames water it was a mistake. The lower portion is raw Thames water; the upper portion is filtered water from the clear water wells.

21,485. (*Sir John Dorington.*) This is the water about to be sent to the consumers?—Yes.

21,486. (*Chairman.*) Do you mean that there was ever water sent to the consumers of that colour?—No, the depth of colour is simply measured by the height of the line.

21,487. (*Mr. Mellor.*) Yes, but then, as my Lord points out, some of these lines are much darker than others?—They are so coloured simply to assist the mind. Where they are darker they represent flood water.

21,488. (*Chairman.*) One first result of this diagram would be, that the darkness of the colour of the water is in direct proportion to the magnitude of the flood?—It appears so.

21,489. (*Sir George Bruce.*) What indication is there here of the quantity of microbes?—We commenced examining the bacteria in 1894.

21,490. (*Chairman.*) What does this line of bacteria show—the red line?—The monthly averages of the microbes.

21,491. (*Mr. Mellor.*) What is this line along here, There are two lines—a red one and a black one?—These are microbes on the other side of the black. The orange line is the microbes. Take the orange line 20 microbes per cubic centimetre, 40 per cubic centimetre, 60, 80, 100. If they exceed 100, we consider that the water is not as good as it ought to be.

21,492. That is to say impure?—Not as good as it ought to be. I should not call the water impure.

21,493. Would you drink it?—Yes, with 100 per cubic centimetre.

21,494. You would?—Yes.

(*Sir George Bruce.*) This is the raw water.

21,495. (*Major-General Scott.*) The microbes are in the filtered water, are they not?—The microbes are in the filtered water.

21,496. (*Sir George Bruce.*) But this black line represents the raw water?—Yes, the black line represents the raw water. The microbes represent microbes in the filtered water.

21,497. In this water that is indicated there?—Yes. Where the microbes are over 80, there is no flood at all, there is very little water running over Teddington Weir. Here there is a little rise in the microbes; but it goes down again when there is a very high flood. Here, when the water is low in the river, the microbes are very much higher and then they sink.

21,498. (*Major-General Scott.*) When the water is low they rise?—Going over Teddington Weir.

21,499. (*Sir George Bruce.*) There are more microbes then?—There is not much connexion between the flow over Teddington Weir and the microbes in the filtered water.

21,500. (*Major-General Scott.*) Let me just put one thing to you while you are on this. This filtered water is not altogether, is it, the water resulting from the flood. It is the water partly resulting from the floods, and partly from the stored water of some of the companies, and the gravel water of some of the companies, who always endeavour to avoid taking flood water for fear of damaging their filters?—That is so.

21,501. So that the microbe cultivation here is a cultivation not altogether of flood water?—That is so.

21,502. (*Mr. Pember.*) Mixed water?—Yes.

21,503. (*Sir George Bruce.*) But do you take the quantity of microbes in the unfiltered water—the raw water as well?—We do. They mount up to thousands, 10,000, 20,000, 100,000, sometimes per cubic centimetre.

21,504. (*Sir John Dorington.*) So far as this diagram goes, the microbes are in inverse proportion to the quantity of water going over Teddington Weir?—Yes, that might be.

(*Sir John Dorington.*) That is a fair generalisation, I think.

21,505. (*Major-General Scott to witness.*) The difficulty is, if you try to apply that to the characteristic effect of filtering flood water, you will find this complication—that some of the companies avoid taking flood water, and, therefore, these results are mixed with the results from water that is not actually flood water?—That is so.

21,506. (*Chairman.*) And which may be entirely free from flood water?—It may be.

21,507. It may be, if the companies abstain from taking flood water in times of flood, they are taking nothing but water that has been standing a long time in the reservoir, and, therefore, has got quite free from microbes?—Yes.

(*Mr. Mellor.*) It is not always so, looking at the number of microbes in those two cases.

21,508. (*Chairman.*) There they are taking pure river water. Here they are taking nothing but Thames water and yet the microbes are higher?—That we should consider pure water.

21,509. (*Mr. Mellor.*) That is 83?—Yes.

21,510. (*Mr. Pember.*) Still within the standard of purity?—Yes, the standard of purity originally was taken at 200 per cubic centimetre. But more recently, in order to be very strict and very severe, we have taken it at 100 per cubic centimetre.

(*Chairman.*) Do you want us to draw the inference that the best thing is to draw Thames water when it is in flood so as to get only a few microbes.

(*Mr. Mellor.*) That is what this plan would show.

(*Witness.*) All the results of our experience show the contrary, my Lord.

21,511. (*Sir George Bruce.*) Fewer microbes in flood relatively?—No, more microbes.

21,512. (*Chairman.*) Have you ever had a single test of Thames water in flood passed through filters and unmixed with storage water?—I have to take the water as I find it at the clear water well.

21,513. I am not in the least finding fault. I only want to know the fact. You have not got, as I understand, a single analysis which you can identify as flood water that has been merely passed through the filters and has not been mixed with any water that has been stored for some time?—I cannot say at the moment whether I have or not. I do not think I have.

21,514. (*Mr. Pember.*) You have made experiments on the raw water you say?—Yes.

21,515. (*Chairman.*) In the raw water you do find that the number of microbes increase in the flood?—I have another diagram, my Lord, if I may show

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Sir W. Crookes. you, which will illustrate the microbes in the flood water.

17 Jan. '99. 21,516. (*Sir George Bruce.*) What do these shaded lines—in the top portion of the diagram—much lighter than these, indicate?—These show the amount of colour.

21,517. Merely the amount of colour?—And the organic matter together.

21,518. Nothing to do with microbes?—Nothing to do with microbes.

21,519. (*Chairman.*) As I understand, it is the height of them that shows the colour, and not the intensity of colour on the diagram?—The intensity is simply to draw your eye. Instead of looking down there, you say simply, “these are flood waters; these are when the Thames was in flood.” The Thames was not in flood in those two intermediate ones.

21,520. (*Major-General Scott.*) Then the colour of the filtered water reflects the condition of the river, it being more peaty in flood than in low water?—It does. The colour is simply a little peaty matter which is washed into the river by the flood—perfectly harmless.

21,521. (*Chairman.*) And is not got rid of by the filters?—I ought to explain that what I have put here as colour would scarcely be noticed as colour in a glass of water. I do not think it would be noticed at all.

21,522. No, but the colour, such as it is, found as it is, does increase directly with the flood?—It does, certainly.

21,523. (*Sir John Dorington.*) In fact, that is your Report on the London Water Supply, in the form of a diagram, is it?—It is, yes.

21,524. (*Sir George Bruce.*) You do report upon the colour every month?—Every month.

21,525. And they generally seem to be very bright?—Always very bright.

21,526. Then the filters do not get rid of the colour, but they do get rid of the microbes?—They do practically get rid of the microbes. The colour is perfectly harmless. So are the microbes.

(*Chairman.*) That is a consoling view.

21,527. (*Sir George Bruce.*) You have established in a direct proportion, have you not, between the colour of the water and the organic elements in the water?—I think they run exactly. I have other diagrams showing them. This shows that the organic carbon, the organic nitrogen, and the other organic constituents of the water are exactly in relation to the brown colour of the water.

21,528. (*Sir George Bruce.*) The browner the colour the more organic matter?—Yes.

21,529. (*Major-General Scott.*) And, therefore, we may take it that the organic elements increase with the amount of flood, just as the colour does?—Yes.

21,530. (*Chairman.*) The organic elements, I suppose, are undesirable—they are mischievous?—The London water at the worst is never anything like so dark in colour as Loch Katrine, or Thirlmere, or any of the Welsh waters. I can hand in a diagram showing that. (*The witness handed in diagram B. See “Maps, Plans, and Diagrams.”*)

21,531. (*Mr. Mellor.*) Because of the peat?—Because of the peat. They would be very much darker than this.

21,532. (*Mr. Pember.*) May we take it that all these constituents which are represented by that upper shading, are present in other waters to a greater extent than they are in the London water?—The brown colour is certainly. I have a diagram to show that.

(*Chairman.*) We will try and understand one diagram before we go to another.

21,533. (*Major-General Scott.*) The organic elements are indications of vegetable, and, to a certain extent, of animal pollution?—To a certain extent animal pollution, but principally vegetable.

21,534. (*Chairman.*) Undesirable, and, therefore, things to be got rid of, and to be avoided?—Yes.

(*Sir George Bruce.*) As far as you can.

(*Witness.*) May I read a passage from our Report of November 1898? “The large rainfall which took place in October, has had the effect of suddenly washing into the rivers organic matter accumulated on the water shed during the three previous months; and as the reservoirs of the East London Company were almost empty at the end of September, the Company

“was forced in October to use the Lea, without the advantage of the purification resulting from proper storage in the reservoir. During this critical time we took extra pains to ascertain the character of the East End supply, and additional samples were regularly taken from various points in the district. It is highly satisfactory to report that, in spite of the severe strain thus thrown on their filtering appliances, the clear water supply to East London has been bacteriologically better than it was during the months of August and September.”

21,535. (*Major-General Scott.*) Now, with regard to that, does not East London water go into the reservoirs from the Lea, from the intake?—It does.

21,536. And, therefore, there must be a certain amount of purification in the course of the travel of the water through the reservoirs, must not there?—Yes, but in this case the reservoirs were practically empty. The water was run in and taken out immediately. It had not time to settle.

21,537. That was so to a certain extent?—Practically we may say there were no reservoirs at work.

21,538. (*Mr. Mellor.*) Have you made any analysis of the bottom water in any of the reservoirs?—I have not.

(*Mr. Pember.*) May I put this question to clear up my own mind about it. We notice the presence of the microbes, and it does seem to show to some considerable extent, though modified in the way Major-General Scott pointed out, that the water is mixed water that is sampled. Now, I ask whether the fact that the microbes are in inverse proportion to the amount of water coming down the river at the time may not be accounted for to some extent by the extra power which the sun has over the shallower water, and the water moving a little more slowly in the stream, and so calling into existence a certain amount of that microbial life, or whatever it is.

21,539. (*Chairman.*) You have heard the question; what do you say to that?—I am afraid I did not hear the commencement of it.

(*Chairman.*) Mr. Pember suggests that the number of microbes shown on your diagram which increases, as the flow over Teddington Weir is smaller, may be due to the greater vitalising power of the sunshine over the shallower water of that period.

(*Mr. Pember.*) The generative power of the sun.

21,540. (*Chairman.*) Mr. Pember suggests that the generative power of the sun is greater?—Experience, I think, goes in the opposite direction, my Lord. Sunlight has a deleterious effect upon microbes.

21,541. (*Chairman.*) It kills them?—It kills them.

21,542. Have you got a diagram showing the number of microbes you find in the raw Thames water in flood, and in times not in flood?—Yes. (*The witness handed in diagram C. See “Maps, Plans, and Diagrams.”*) The interest in this diagram is in the bottom line. This line represents the microbes in the raw Thames water unfiltered, and it is to the same scale.

21,543. (*Sir George Bruce.*) Is it the same water?—The same water unfiltered and filtered. The scale is shown at the sides—50 microbes, 100 microbes, and so on.

21,544. (*Sir John Dorington.*) The scales are the same in the case of both, you say?—Yes, but I am obliged to stop at the top in the upper one. I should have to go three or four times the length of the diagram in some cases to complete the lines.

21,545. The early figures are the same?—They are the same up to a certain point. The diagram only extends to 5,000 per cubic centimetre, but this line is 7,000, that 9,000, that 7,000, and so on, up to 73,000, and 98,000.

(*Chairman.*) Just let us stop there a moment; take the 98,000 line and follow it down.

21,546. (*Major-General Scott.*) What is your top line?—5,000.

21,547. Then the 98,000 would be far beyond that?—The line would be about 19 times the length of this diagram.

21,548. (*Chairman.*) So be it; but you found 98,000 microbes per cubic centimetre in the raw Thames water?—Yes.

21,549. That was in September, 1897?—Yes.

21,550. In the filtered Thames water of that same day you had about 80 microbes per cubic centimetre?

Yes. May I ask you to look at September 1897, on the first diagram which will show you what state the Thames was in?—The Thames was very low indeed then.

21,551. Just take 6th February, 1897. How many microbes were there in the raw water then?—9,500.

21,552. As against 98,000?—As against 98,000 here.

21,553. Then, there were many more microbes when the Thames was low than when the Thames was in flood?—Yes.

(Chairman.) There are only 25 to the cubic centimetre there.

21,554. (Mr. Mellor.) Is that caused by the water being more diluted?—The water is highly diluted—very diluted with the rainfall.

21,555. (Sir George Bruce.) Then, a large quantity of land water collects in flood which has not had time to get microbes—it has come straight from the clouds?—Yes, it washes a certain quantity of microbes off the land, but the amount of impurity which the rain brings into the river is small in comparison with the enormous dilution it produces.

21,556. (Mr. Mellor.) Now with regard to these microbes, do they remain in the filter bed, in the sand; do they perish there, or what becomes of them?—On standing they seem to perish and settle when the water is standing in the reservoirs. By filtering they can be mostly got rid of.

21,557. And it does not necessarily make the filter impure? That is what I want to know?—No, it rather improves the filter. It produces a coating on the surface through which microbes will not pass.

21,558. Do you attach any importance one way or the other to the bottom water of the reservoir?—I do not.

21,559. (Chairman.) What I was upon just now was to see whether the filtering got rid of more than the proportionate part of the existing microbes in the raw water. That was why I asked you to take the 98,000. That was September 1897, was it not?—Yes.

21,560. Then there were 80 microbes per cubic centimetre in the filtered water. Now take one where the number of microbes was very small?—I think that August is about the lowest.

21,561. That is 1,100 or 1,200—a little over 1,100 microbes in August 1896, and a correspondingly low number of microbes in the filtered water?—As a rule we cannot find any regular relation between the number of microbes in the raw water and the number in the filtered water. The efficiency of filtering seems to be quite independent of the number going on to the filters. Of course there are some times in which that does not hold good, but as a rule I may say that is generally the case.

21,562. How do you account for the rise here and there of microbes in the filtered water. Here there seems to be a sort of regular curve of periodical rises. What has led to that? Why in these four months, June, July, August, and September of 1897, was the number of microbes higher than the average—

(Sir George Bruce.) Because the flow of the water is less.

(Mr. Pember.) Not necessarily.

(Witness.) That I think is generally the case when there is less flow over Teddington Weir—the water is generally purer.

21,563. (Mr. Mellor.) But then at the time when there is less flow the sun has greater power?—The sun has greater power also. The sun is one of the great purifying agents in water.

21,564. Light?—Light.

(Mr. Pember.) I think the witness said that the number of microbes was in inverse proportion to the amount of the water.

(Sir George Bruce.) So it is.

21,565. (Mr. Pember.) Then what makes him say now that the water is purer when there is less coming over Teddington Weir. (To the witness.) How do you reconcile it?—By purer I mean a less number of microbes per cubic centimetre.

(Chairman.) Because there is the same number of microbes to a less quantity of water—I suppose that is it.

21,566. (Mr. Pember.) I thought all those comparisons were so many per cubic centimetre?—A less number of

microbes and a smaller quantity of water. The microbes are in very small numbers when there is no rain. In a dry, droughty season such as we have had this last year, the microbes in raw water were lower than ever. We frequently found the filtered water sterile.

(Sir George Bruce.) I thought you said it was the other way. I thought you said that the more flood there was in the river the fewer microbes there are to the cubic centimetre.

(Mr. Pember.) The first diagram certainly shows that.

(Chairman.) Yes, that is certainly what I understood you to say.

(Mr. Mellor.) And that is what the diagram showed.

(Witness.) You see with a very small flow over Teddington Weir there are very few microbes.

(Chairman.) Exactly.

(Sir George Bruce.) I thought you said it was the other way about.

(Witness.) With a very small flow over Teddington Weir, very few microbes.

21,567. (Sir John Dorington.) Here is the curve?—It rises up, and there is a greater flow over Teddington Weir. Here, where there is a very small flow over Teddington Weir, there were very few microbes. Where the flow over Teddington Weir rises, there the microbes rise.

21,568. (Mr. De Bock Porter.) Then does it increase with the flood water? The greater the flow in the Thames, the larger the number of microbes?—Yes. It can only be laid down roughly—it is not a law.

(Mr. Pember.) I see the confusion, with the assistance of Professor Dewar—it is this: The first diagram, which showed the inverse proportion, was a diagram which showed what was in the filtered water, and the things in the filtered water do seem irrespective of the amount of the water going over the weir.

(Chairman.) No, not irrespective, but they rise.

(Mr. Pember.) Say there is an inverse proportion.

(Chairman.) Yes.

(Mr. Pember.) But subject, of course, always to General Scott's modification, that when you are looking at the next diagram you are looking at the Thames raw water.

(Chairman.) No, both raw and filtered.

(Mr. Mellor.) The filtered is at the bottom.

(Witness.) Yes, the filtered is shown at the bottom.

(Mr. Pember.) But what you are saying now about the greater the flood, the more you find the microbes, the more impure the water, has reference to the unfiltered water?—Yes.

21,570. That makes the whole difference?—Yes.

21,571. (Mr. De Bock Porter.) Then flood water requires more filtration than water that is taken from the river when it is not in flood.—Certainly.

(Mr. Pember.) May I venture to say this, my Lord—unless we show that whatever the number of microbes in the water that you take to filter, you get rid of them when you filter it, the evidence is worth nothing, but if you do get rid of them when you filter, however great the number of microbes may have been, then it strikes me that all the finessing that is going on at the present moment is useless also.

(Chairman.) The finessing is the result of these diagrams: it is not our doing.

21,572. (Mr. Pember.) Quite so; I am not saying it is anybody's fault but that surely is the sum and substance of the whole thing. May I venture to ask the witness that question point blank. Do you, or do you not, whatever the number of microbes in the unfiltered water, get rid of them by filtering?—We get rid of them by filtering, and it appears to be immaterial how many there are in the unfiltered water. The filters turn out water practically pure from microbes—under 100 per cubic centimetre.

21,573. May I ask him one more question? (To witness.) If you find varying quantities of microbes in the filtered water, it is due to some other cause than the original presence of a greater number of microbes in the unfiltered water?—I have a very strong suspicion that that is the case, but we have not proved it yet.

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(*Chairman.*) The only practical use of all this to us is whether or not we are to draw the conclusion that you can safely take flood water into your reservoirs.

(*Mr. Pope.*) Yes, that is it.

(*Mr. Pember.*) That is the only point.

(*Chairman.*) That is the only point of interest to us.

(*Witness.*) The result of our experience is that you may take flood waters into the reservoirs immediately.

21,574. Without waiting at all?—Without waiting at all, or, at the utmost, I might defer to Dr. Tidy's opinion, which was of great authority. He said it was advisable to wait a few hours.

21,575. If it is advisable to wait a few hours, I suppose it would be safer still to wait a few days?—I do not think so. I should not wait a few hours.

21,576. Wait a minute. Microbes or organic filth washed into the Thames in its upper reaches would not get down to the intakes in a few hours?—We find there is very little difference in the purity of the water. We have taken samples in all times of flood, and examined them. When the microbes are washed down, they are washed down by such an enormous volume of what I may call pure water—it is so diluted that it has no influence on the impurity of the Thames.

21,577. Are these microbes uniformly distributed throughout the whole mass of the Thames?—Yes, I should say they were.

21,578. (*Major-General Scott.*) What you state, I think, amounts to this: that it does not matter how many microbes are in the water above the filtering material, because, the filtrate that you get from underneath is practically unaffected by that factor?—That is exactly so.

(*Mr. Pember.*) That is quite right, sir.

21,579. (*Chairman.*) Is it desirable to fill your reservoir, so to speak, with microbes, and take your chance of the filtering getting rid of them? The fewer microbes you get into your reservoirs the better. I suppose?—Water, on standing in reservoirs, becomes comparatively free from microbes rather quickly.

21,580. (*Mr. Mellor.*) Is that owing to the influence of the sun—of light?—It is owing to the influence of the sun and subsidence. And there is another influence; water taken into the reservoirs from flood would contain a little suspended matter—from a grain to a grain-and-a-half per gallon. That suspended matter as it settles has a very great power of carrying down microbes with it, so if you take water containing this suspended matter and let it settle in the reservoirs, the microbes are carried down and become destroyed at the bottom. Dr. Tidy and ourselves have never found more than a grain-and-a-half per gallon of suspended matter in the worst flood.

21,581. (*Major-General Scott.*) Then it is desirable as a preliminary to filtration to allow subsidence to take place. Is that your opinion?—Certainly that would be. The advantage would be it would save the filters. It would assist the water companies; they would not have to clean the filters so often.

21,582. But is there not this consideration?—If the engineers are dealing with a turbid water they have this difficulty, have they not; the first consideration is they have got to get their supply through; that is to say, they have got to get a certain quantity through. Of course the filters become foul much more rapidly with turbid water, do they not, than with clear water?—Certainly they do.

21,583. Therefore there are a larger number of filters thrown out of use?—Yes.

21,584. And, therefore, the rapidity of filtration with the others must to a certain extent be increased?—Yes.

21,585. Does not that give a tendency, in your opinion, to an inferior quality of water resulting from that filtration?—More suspended matter and microbes would come through. That, to our mind, is the great advantage of large subsidence reservoirs—large reservoirs where the water is kept in a quiet state, when the matter in suspension, microbes and other suspended matter, which is principally clayey matter, will settle to the bottom.

21,586. Therefore it is not desirable to take water, if you could avoid it, directly out of the river in a turbid condition and put it on the filters?—It is not, certainly.

21,587. Now that opens another question. I do not know whether you are aware of it, but in the scheme for the Staines reservoirs, as a general rule, the water is to be taken out of the river and put directly on to the filters. I do not know whether you are aware that that is part of the scheme?—I am not aware of it.

21,588. The plan is to take the water directly out of the river, carry it down to Hampton, and to resort to the reservoirs either when the river is too low to take water out of it according to the conditions, or I presume that there are certain conditions of the river in flood in which that water would be avoided, but still a large proportion of the water is supposed to go down direct. The question is, should there not be some limit with respect to the character of the water which is taken there and sent down to the filters directly?—That is simply a question of convenience and expense for the water companies, I think.

21,589. Would it not affect the quality of the water inasmuch as there would be a tendency to a more rapid filtration when you are dealing with some filters, the others being in a state of foulness which required cleansing?—That would be so, but there are rules and there is a proper amount of superintendence to prevent the water companies doing that.

21,590. (*Chairman.*) What?—The rate of filtration must be regulated by Act of Parliament.

21,591. (*Major-General Scott.*) It is not at present, of course?—I believe it is two and a half gallons per square foot per hour.

21,592. There is no statutory obligation whatever, with regard to the rate of filtration?—Then I am wrong; I thought there was.

21,593. The question is this: should there be some regulation of the character of the water taken at Staines, and sent directly down to the filters?—I do not see that that is necessary.

(*Chairman.*) If there is no such regulation you would have your filters forced and the danger—

(*Mr. Mellor.*) Of their being choked.

21,594. (*Sir George Bruce.*) Would not that entirely depend upon whether you have enough filters or not? If you have enough filters to deal with your water direct it is all right?—Yes.

21,595. If you have too few, of course it will force some of them?—Yes.

21,596. But if you have enough, of course it does not apply—

21,597. (*Major-General Scott.*) You can deal with any quality of water if you have enough filters to deal with it?—If you have sufficient filters of proper material and of sufficient slowness.

21,598. Quite so, but might it not turn out that the number of filters would be so enormous that it would be a most uneconomical thing to do?—I think not.

21,599. (*Mr. Mellor.*) How often ought you to clean the filters, in the ordinary course I mean to say?—That is an engineering question we have not gone into.

21,600. (*Chairman.*) You were under the impression that there was some regulation as to the amount of filtration that took place in a given filter. What made you say that?—In the Water Examiner's Report on Metropolitan Water Supply is given the rates of filtration, the thickness of sand, and the areas of filter beds.

21,601. But there is nothing to oblige the companies to comply with all those figures, is there?—I was under the impression that that was the case—that the Water Examiner has ample power, if the water companies are giving badly filtered water, to force them to filter it properly.

21,602. (*Major-General Scott.*) The Local Government Board have no control over the manner of filtration. I think you may take that from me?—The rate of filtration—

21,603. They have no control over the thickness of sand, the rate of filtration, or the quality of the materials. It is the result with which they have to do.

(*Mr. Pember.*) Quite so.

(*Witness.*) Yes, but if the result is bad, they can make the companies improve it.

21,604. (*Major-General Scott.*) Quite so, if the results are bad, but they have nothing to do with the con-

struction of filters?—No, but I am speaking of the rate of filtration.

(Mr. Mellor.) Nor the mode in which they are used.

(Major-General Scott.) No.

21,605. (Mr. Pember.) My Lord, would you mind asking the witness this question, or allow me to ask him. Every mile, and therefore every yard that the flood travels down the river it is undergoing a process of subsidence, is it not?—It is, unless the speed is so great as to keep the suspended matter in the water.

(Mr. Pember.) Quite so, and I think we may dismiss that as a thing that does not exist, does it, in the Thames.

(Chairman.) While the Thames is in flood.

21,606. (Mr. Pember.) Supposing we were taking the water down the aqueduct, for instance, it would be miles before it got to the subsiding reservoirs?—It would.

21,607. Would not that have a beneficial result on the water—it would go very slowly, you know, down the aqueduct?—If it went very slowly down the aqueduct there would be subsidence and by that amount the water would be improved.

21,608. (Mr. Littler.) When it got into the aqueduct it would be wholly unaffected by flood?—Yes.

21,609. (Mr. Pember.) There is one other point I should like to ask. (To the Witness.) I dare say you are aware that many of the companies, and I think I may venture to say all of them, have subsidence reservoirs of their own?—Yes.

21,610. Into which the water passes before it goes on to the filters?—Yes.

21,611. Would not that again mitigate the condition of the water before it was turned on to the filters?—Subsidence would always improve water very greatly.

(Mr. Pember.) If you turn to the same report of Major-General Scott's for November, 1898, you will find on page 14 a fact which I daresay you might think instructive to you. I see there is a description of raw and stored river waters not filtered; and then I see this: "New River Out: Before passing through reservoirs, November 21, 2,060 microbes per centimetre; after passing through those reservoirs, but before filtration on November 21, only 940," so that there is a reduction of over 50 per cent.; and again, on November 16 the same figure is not 940, but 560, so that there is a reduction from 2,000 down to 500, which is a reduction of 75 per cent. through merely passing through the reservoirs themselves without any getting on to the filters at all.

21,612. (Chairman.) You have been speaking of microbes hitherto, Sir William. Is the nitrogen or the nitric acid a mischievous element in the water?—The nitric acid is not; it is a proof that certain mischievous agents have been destroyed.

21,613. And the nitrogen?—The organic nitrogen is evidence of organic matter containing nitrogen.

21,614. Is that mischievous?—It may be animal matter, and then it might be mischievous; it may be vegetable matter and then it would not be mischievous.

21,615. Is there any relation between the amount of organic nitrogen to the state of the river?—I think I have a diagram showing that.

21,616. Without a diagram could you give me the fact. I have got in my hand your own report for the month of December, 1898, and the Thames during that month was—I will not say in flood—but it was high; it was above the mean apparently. Do you know what the flow of the Thames was in December, 1898?—In December, 1898, there was a flood of over 3,000 million gallons.

21,617. I see that in that month the quantity of organic nitrogen was sometimes three times as much, sometimes more than three times as much, as from the Lea—

21,618. (Mr. Pember.) Would there be a flood in the Lea at the same time?—Probably. Flood is produced by rainfall, which would fall over the valley of the Lea, I suppose, in some degree.

21,619. (Chairman.) The New River Company, whose water you analysed, pump from their wells, and from all kinds of sources, do not they, as well as from the

River Lea?—Yes, but the variation in the organic carbon and organic nitrogen from one month to another is slight. The variation which is from one to three is really of no importance. The real thing is the ratio between the carbon and the nitrogen. When the carbon is high in proportion to the nitrogen, the organic matter is of a vegetable quality; when the carbon is low in proportion to the nitrogen, it may be considered that it is more mixed with animal matter. I have a diagram showing the variation from 1881 to the present day.

21,620. What I want to know is whether there is any relation between the amount of flood in the river and the amount of these organic elements, of which the organic nitrogen is a mischievous one?—There seems to be no relation. The flood brings down vegetable matter principally.

21,621. I should have thought it brought down a good deal of animal refuse such as manure?—It is swamped by the great dilution.

21,622. (Sir John Dorington.) Generally, you regard this Table I. in the Report for the month of December as showing satisfactory water?—Yes.

21,623. That is for a month when the river was pretty full and had one flood in it?—Yes.

21,624. (Chairman.) Is there any other mischievous element which has any direct relation to the amount of water coming down the river?—No.

21,625. Then your conclusion is that flood water may safely be put certainly into reservoirs and even taken direct on to the filters, provided there are filters enough?—Provided there are filters enough. The only effect would be it would clog up the filters sooner.

21,626. Then you regard any restriction upon the taking of flood water as unnecessary?—Quite unnecessary.

21,627. Have these examinations of yours been sufficiently prolonged to make that conclusion a safe and a certain one—it is three or four years' experience you have had?—Three years' experience. We have not had anything to show to the contrary. Of course, it is more a matter of engineering than chemistry, but somebody would be in charge of the reservoirs to know when to turn flood water in. If the reservoirs were three-quarters full, and had been standing for some time, the water in them would be almost as good as filtered water. Therefore, it would be unadvisable to turn in turbid flood water at first. The engineer in charge would say: "Here is a big flood coming down, it will last, I daresay, a great many days; we do not particularly want the water in the reservoirs, we will let some of it escape until the water comes down more free from turbid matter." Because, putting turbid water into the water in the reservoirs that was purified by standing would make it all turbid. But in other cases if the reservoirs were nearly empty, and things were getting serious, there would be really no harm in turning the first flood water into the reservoirs to fill them up.

21,628. (Sir John Dorington.) That is, supposing it was desirable to accumulate water from the winter floods to stand for the summer, you would take the water in at any time, and let it stand there till you wanted to draw it off for the filters?—It would not practically matter when it was taken then. I would fill the reservoirs up in the winter, irrespective of whether it was the first flood water or the last.

21,629. Have you any opinion as to whether water taken into very large reservoirs—reservoirs measuring square miles—would become good or would spoil in the keeping?—I think it would improve, all one's experience is that it improves bacteriologically and chemically, in colour and in suspended matter.

21,630. (Chairman.) In spite of the size of the reservoir—that has no influence?—In spite of the size.

21,631. Of course, the reservoirs that we have had suggested to us in evidence would measure square miles?—Yes; and they would expose, of course, square miles of surface to the sunshine.

21,632. And that would be good and not bad?—That would be very good.

21,633. Is it better to have water standing in an open reservoir or running along a closed aqueduct in a pipe?—In an open reservoir exposed to the air.

21,634. (Sir John Dorington.) Would there be any deleterious influence in a closed reservoir of a hundred

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miles?—I should think there would be. We have proved that in the work we have done with the stand-pipes. We have taken water from the clear water wells of the companies, and we have taken water from the stand-pipes. We always find the water from the stand-pipes contains a great many more bacteria than the clear water wells. Now the water going into the mains we know is tolerably free from microbes, but when we take it from the stand-pipes after having gone through the mains there are always a great many more microbes in it. That is caused by the multiplication of microbes in the mains; and that which takes place in the short mains in London would take place, I presume, in the much longer mains where water has to be carried some hundreds of miles.

21,635. (*Chairman.*) Might that result from there being colonies of bacteria in the mains dating back to the days when filtration was less carefully performed than now—infected mains, I mean?—That may be so.

21,636. Have you ever analysed, for instance, the water that comes from Thirlmere to Manchester at the end of its journey?—Yes, and the water that comes to Liverpool also.

21,637. Has that acquired microbes in the course of its journey?—The microbes in the City are decidedly more than those in the Lake.

21,638. (*Sir John Dorington.*) Do you mean at the outfall of the aqueduct or in the mains?—In the mains.

21,639. (*Mr. De Bock Porter.*) Is not the water of the Kent Company kept in closed reservoirs?—We have never examined the water of the Kent Company, so I can only speak of it from hearsay.

21,640. (*Chairman.*) Parliament has required that every reservoir within five miles of St. Paul's, I think, should be covered, has not it?—Yes, and one can understand the reason of that.

21,641. That is to prevent impurities and smuts, and so on, falling into the water?—Yes, dirt and smuts.

(*Mr. Pember.*) Yes, and the operation of the mud-lark.

21,642. (*Chairman.*) Yes. (*To the Witness.*) Have the operations of the Thames Conservancy tended to improve the Thames water, in your judgment?—They have, certainly.

21,643. That is only by preventing foul matter being washed into the Thames or into the affluents of the Thames?—Yes. Since the Act came into force the microbial impurity in the Thames has very much diminished.

21,644. Yet those impurities, whatever they are, can only be washed into the Thames or its affluents by a flood?—Yes, certainly.

21,645. And according to you, as I understand it, a flood rather improves the river?—It is the dilution that improves it.

(*Mr. Pember.*) I suppose that is it; the increase of impurity is not in the same proportion as the increase in the volume of water.

21,646. (*Major-General Scott.*) Your statement was that in the raw flood water the microbes increased with the volume of water in the river, was it not?—In the raw flood water, yes, but in the filtered water there does not seem to be any relation.

(*Major-General Scott.*) You say, "in the raw flood water," but, I think, what Lord Llandaff was asking was about the state of the river?

(*Chairman.*) Yes.

(*Witness.*) Then I mistook it.

(*Mr. Pember.*) Probably it is not in exact proportion with the increase in the volume—that is what is meant.

21,647. (*Chairman.*) In the raw river water there are more microbes per cubic centimetre, are there, than in the raw water when it is not in flood?—Yes, decidedly.

21,648. (*Mr. Pember.*) But not in exact proportion to the volume of water?—It is principally an atmospheric washing; aerial microbes are washed in.

21,649. (*Chairman.*) We have misunderstood you, I think. In the raw water are there more or less microbes than in the water when it is not in flood?—In the raw water there are more microbes in flood than not in flood.

(*Sir George Bruce.*) That is quite contrary to what I understood. I thought it was explained by the extra quantity of water being greatly in excess of the proportional quantity of microbes; and really I understood Sir William to say previously that there are less microbes per cubic centimetre when it is in flood than there are when there is a little water over Teddington Weir.

(*Witness.*) There are more microbes in flood per cubic centimetre.

21,650. (*Major-General Scott.*) The great source of microbes in a case of that sort, in the case of flood, is the surface of the land, is it not?—The surface of the land and the aerial microbes washed down by the rain.

21,651. (*Chairman.*) I hope we have got the raw water right. On the other hand, in the filtered water you say that the lower the state of the river the more microbes there are?—No, I am afraid I have not expressed myself properly.

21,652. It is your diagram I am referring to. Your diagram shows most microbes in the filtered water when the river is low?—During the last drought when there was very little water in some cases flowing over Teddington Weir, the water was very free from microbes.

21,653. (*Mr. Pember.*) The filtered water?—The filtered water; in many cases we had sterile water—no microbes at all.

(*Sir John Dorington.*) That is hardly what the diagram shows.

21,654. (*Sir George Bruce.*) Then how was the natural water of the Thames at that moment?—Very good.

21,655. As regards microbes?—Yes.

21,656. (*Major-General Scott.*) So the good quality of the water in the river was reflected on that occasion in the filtered water?—Yes; the filters had so little to do.

21,657. (*Chairman.*) Perhaps I ought to ask you this: These bacilli that we have been talking about, are they dangerous bacilli or not?—We consider them perfectly harmless river microbes. We have tested constantly whenever there was an excess of microbes in the filtered water over 100. We have taken great pains to test them to see what they were, and we have never once in the whole course of our experience found a pathogenic organism.

21,658. Then if there were 300 or 400 of them per cubic centimetre, it would not matter?—No, not of these harmless ones.

(*Chairman.*) Then what have we been talking about all this morning?

(*Mr. Pember.*) That is a particular form of *finesse* which I said I thought was not very useful. Surely the whole thing is this, my Lord, is it not? Supposing the microbes are there, and the people are wanting to get rid of them, however many there be to start with, he says they are all got rid of down to a minimum by filtration. That is all.

(*Chairman.*) And if that minimum was trebled or quadrupled, it would not matter.

(*Mr. Pember.*) No, but to satisfy sentiment and it looks well in a Report—that would be the result.

(*Witness.*) I think the whole question of microbes is more a sentimental one than a practical one.

21,659. (*Sir George Bruce.*) You might drink the unfiltered Thames water, do you mean, without its doing any harm?—I do not think one would take harm. One might, but, personally, I should not object.

(*Mr. H. L. Cripps.*) I do not know what would be convenient, my Lord, to the Commission and to the witness—there are just one or two questions which I should like to have put to Sir William Crookes if the Commission would permit; my Counsel might possibly do that some day in the future when they are here, but I do not wish to ask the Commission for that concession; there are only one or two very small matters that it is worth asking Sir William about—

(*Chairman.*) Can I put them for you?

(*Mr. H. L. Cripps.*) If it is convenient, I will just ask the questions now.

(*Chairman.*) Pray, do it at once, or I will, just as you like.

Cross-examined by Mr. H. L. Cripps.

21,660. I think we agree as regards this Thames water, that it is a question of filtration; that is to say, filtration, properly conducted, and without any mistakes, may produce out of the Thames raw water, an exceedingly pure and satisfactory water?—Yes.

21,661. We agree on that. Of course, the whole thing, therefore, depends upon the efficiency of filtration?—Yes.

21,662. And from that point of view, I suppose, you would agree that everything which can be done to simplify the process and management of filtration is an advantage?—Yes.

21,663. It would remove the risk of accident which might defeat the objects of filtration. You will admit, I suppose, that there are times, and that there have been times within your own observation, when the efficiency of the filter, in some way or other, has undoubtedly broken down?—Yes, certainly.

21,664. There have been many cases?—Yes, we meet with those occasionally.

21,665. The more you can lessen the risk of any such action by the simplification of the management the better?—The simplification of management? No, it would be rather the opposite, would it not?

21,666. Do you not think that having the management as it now stands—to put the question more directly—in the hands of eight companies, in the hands of eight separate staffs of officials, may tend to multiply the causes of accident as compared with the management by one single authority?—I do not think so. If there are eight companies, and each company has a very large number of filters, if one of those filters happens to go wrong, it is not such a serious thing as if there were only a few filters in the hands of one body, and one of those filters were to go wrong.

21,667. I understand, from Sir Edward Frankland's Report—I will just ask you to take this as an extract from it—that in the case of the Southwark and Vauxhall wells, there are eight filter wells from which you derive your samples; is that right?—

(Mr. Pope.) Beds, I suppose, you mean.

21,668. (Mr. H. L. Cripps to Witness.) There are eight filter wells?—Yes.

21,669. And there are 18 filters?—Yes.

21,670. (Mr. Pope.) What is a filter well?—The conduit or well into which the water flows from the individual filter. They are all carried into the clear water well.

21,671. (Mr. H. L. Cripps.) If there are 18 filters and 8 filter wells, it follows, does it not, that each sample must, on the average, contain water mixed from more than two filters?—Yes.

21,672. So that you cannot, by that process of examination, ascertain the working condition of particular filters?—It is done very easily in this way. As soon as we see—which we can in a very short time—that one of the samples we have taken from one of those filters, or one of those wells, shows signs as if there was likely to be an excess of microbes, we telephone instantly to the engineer, and say: Look at such and such a group of filters, something is wrong there. In most cases we have, in a short time, a telephone message back thanking us for it, and saying they have found there was a little leakage in one of the filters—and it is remedied in a few hours.

21,673. I find this extract on page 11 of the Water Examiner's Report for December 1896: "There were 'no less than 16,000 microbes per cubic centimetre' found in the Southwark and Vauxhall No. 8 Filter 'Well.' Do you remember that?—That was when Sir Edward Frankland reported on the enormous increase; and we found it also. I remember that.

21,674. At the foot of page 11, Sir Edward has the following note: "The Southwark Company's No. 8 Filter had only been at work a very short time before the sample was taken, and was shut down immediately afterwards." I merely refer to that as a sample of one of those accidents which may occur if we are relying entirely upon filtration?—Of course, accidents will happen to filters, and the only thing is to detect it as soon as possible, and get it remedied as quickly as possible.

21,675. Then does it not follow from that, that it is desirable that the raw water with which you commenced your "manufacture," as I think one of the companies' witnesses described it—the raw water which you first began to deal with—should be as free from turbidity and risk of pollution as possible?—From that point of view it would be.

21,676. Perhaps you could describe this shortly. What steps have you taken to ascertain what I might, perhaps, describe as the behaviour of a Thames flood? Have you any consecutive series of analyses of samples of water taken from the river, in times of flood, on any given days?—No.

21,677. None that you can furnish us with?—No.

21,678. (Chairman.) I understood that you took 10 every day?—Of the filtered waters, but not of the raw waters. We take raw water for bacterial work, but not for chemical works. Were you speaking bacteriologically or chemically?

21,679. (Mr. H. L. Cripps.) I was speaking of the raw water of the River Thames as it passes the intakes of the companies in times of flood; I want to know what steps you have taken to investigate the condition of that water?—We take samples, and examine them bacteriologically.

21,680. (Chairman.) Every day?—Not every day.

21,681. I understood you to say that you took samples from the raw water from the Thames 10 times a day on the average?—We have no special interest in the raw water, and we only look at it occasionally, it is the filtered water we examine daily.

21,682. (Mr. H. L. Cripps.) You see, we have an interest in the raw water; we are anxious to ascertain its behaviour and quality, and have a series of investigations. I wanted to know whether you also had taken any samples of the Thames water in times of flood, so that we could see how near our results agree or disagree; but I understand you to say that you have not thought it necessary to do that?—We give it in the Reports every month. Every month we give the mean of the bacteriological analyses of about 26 samples of Thames unfiltered water.

21,683. During which month?—I have here the Report for the last month—for December.

21,684. This last December?—Yes; but you will find it in any of our Reports. Here we give the mean of 26 samples as 11,181 microbes per cubic centimetre of Thames unfiltered water.

21,685. I was not asking you as to the quality of the water; I think the Chairman has already rather intimated that the question of the quality of water is not very material to the present inquiry, and I did not want to embarrass myself with that. What I was rather anxious to ascertain from you was if I could see the quantity of solid matter which you had found in samples of water taken from the Thames in different states of flood?—We have taken a few; Sir Edward Frankland has taken a great many, and Dr. Tidy took a great many. We have never found more than 1½ grains per gallon.

21,686. You have never got more than that?—We have never got more than that in the worst flood.

21,687. (Mr. Pember.) Neither you, Tidy, nor Frankland?—No.

21,688. (Mr. H. L. Cripps.) Can you tell me this—perhaps the question is not a very easy one for me to put, but you will follow what I mean. Let us assume there has been a time of drought and the Thames has been at its normal level and the flood begins; have you taken any samples which have enabled you to compare the condition of the Thames water during the first rise of one foot, the second rise of one foot, and so on?—No.

21,689. I observe that Mr. Middleton in giving his evidence here, dealing with the question of storage, at Question 14,361 says:—"With regard to that I say the 'storage required, according to me, is 18,000 millions. According to Sir Alexander Binnie it was 28,000 millions. The reason for the difference is that Sir Alexander says that two reservoirs must be put out 'of use for purposes'—we need not go into the purposes to which he is referring. Have you considered what would be the result as regards weight, for instance, upon that quantity of water of 1½ grains of solid matter per gallon?—No, I have not. I think I remember reading it would increase at the rate of a

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few inches a century, or something like that, at the bottom of the reservoir.

21,690. I have been doing the sum whilst you have been giving your evidence—I do not know whether I am right. Would not the quantity of solid matter contained in 18,000 million gallons, taking one grain and a half to the gallon, be upwards of 1,700 tons?—I have not calculated it, but I have no doubt your calculation is right.

(Mr. H. L. Cripps.) I am very doubtful, indeed, about my calculation, although I have made it. You cannot give it me off-hand?

(Mr. Pember.) How many cubic yards is that?

(Sir George Bruce.) It is hardly a question for a chemist.

(Mr. Pember.) Do you make it 1,700 tons?

(Mr. H. L. Cripps.) I make it 1,722. I know your arithmetic is much better than mine.

(Mr. Pember.) How many cubic yards would that be—because I want to see what film of an inch it would be, spread over the area of the bottom of all these reservoirs.

21,691. (Mr. H. L. Cripps to Witness.) I wanted you to understand that, according to my calculation, I make out that there would be that quantity of solid matter in one filling up of that reservoir, supposing it were filled up in time of flood—an 18,000 million gallons reservoir filled up with water, containing $1\frac{1}{2}$ grains to the gallon, would receive in solid hard matter, according to my calculation, 1,722 tons?—Yes, but why is it to be $1\frac{1}{2}$ grains? I said we had never got more than $1\frac{1}{2}$ grains, but in most cases it is very much less. You must not assume that you always get the maximum in every flood.

21,692. I thought I caught the expression by you of $1\frac{1}{2}$?—No, $1\frac{1}{2}$; I corrected myself.

21,693. Can you give me the analyses?—The highest quantity is about $1\frac{1}{2}$, and the lowest comes to about 0.5 to 0.6.

21,694. What do you mean by the lowest?—The lowest that we got of suspended matter in the flood.

21,695. In what condition of flood?—When it is not very much of a flood; when it is two or three feet above the banks.

21,696. In other words, 0.6 of a grain per gallon would be a very clear water?—Not very clear.

21,697. But we are not dealing with clear water?—Not very clear.

21,698. I am trying as far as I can to get at what would be the result upon these reservoirs of the introduction of water containing a given quantity of solid matter; if you tell me you have not got the analyses, there is an end of it?—That is an engineering question, not a chemical one.

21,699. Very well. You can tell me what is the nature, probably, of the deposited matter in Thames water in a time of flood?—Principally clay.

(Mr. Pember.) I can give you the figure you ask for, Mr. Cripps. I have not done it, but a much better man than I am has. One inch of dry solid matter of one square mile of reservoir would weigh 90,000 tons, or 50 times your 1,722, so that it is one-fiftieth part of an inch, if the 1,722 is right.

(Mr. Pope.) Over that area?

(Mr. Pember.) Over that area of one square mile—and the reservoirs are to be more than one square mile.

(The witness withdrew.)

After a short adjournment.

Professor JAMES DEWAR called and examined.

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21,710. (Chairman.) I will ask you a very few questions only to clear up certain matters that have not seemed to us quite clear on what we have heard this morning. Let us deal, please, first with raw Thames water. Does the number of microbes per cubic centimetre increase or not in times of flood?—It does.

21,711. It increases?—Yes. After every shower of rain in river water there is always a large increase in the number of microbes.

21,700. (Mr. H. L. Cripps to Witness.) Would the solid matter in the water of the Thames in times of flood be deposited as a solid at the bottom, or would it form a slime or a sludge?—A sludge, of course.

21,701. I think I will not occupy the time of the Commission in discussing the question of microbes, but I want just to ask you a question about what you said as regards Manchester. Let us be quite clear about that. I think you said that more microbes were found in the city than in the aqueduct—or in the lake was it?—More found in the city after passing through the pipes than in the lake.

21,702. That is one thing—after passing through the pipes?—Yes.

21,703. You do not bring that charge against the water as it issues from the lake?—No. I brought that as an illustration, to show that water, however pure you put it into pipes and mains and conduits, is always somewhat deteriorated by microbes after passing through.

21,704. I suppose we shall all admit that mains, particularly if they are leaky, may permit matter to come in which is not in the water originally introduced into them?—No, the pressure would always be from the inside to the out—matter could not come in.

(Mr. Pember.) I should have thought if they were leaky it went out. With high pressure and constant supply, there is not much chance of a microbe getting in.

21,705. (Mr. H. L. Cripps.) I rather think I asked you this before, but I am not quite sure—would you not agree with me about this: assume, for the moment, that a large additional quantity of water was required for the supply of London, and that it would require filtration in any event, would it not be preferable, in your opinion—really preferable—to start with a clear water, rather than to start by taking in water which otherwise would be discarded, because it is Thames water in flood?—If you take in clear water, you put less strain on the filters. That is the only objection I can see to taking water which is not clear.

21,706. Up to a certain point we know that water can be supplied from the River Thames by drawing on the River Thames when the raw water is in a fairly good condition?—Yes.

21,707. But now, the problem which is exercising the Commission is this—assuming a much larger quantity of water is required as an additional supply, is it preferable to start with a clear water, or to start with the water of the Thames in time of flood, which otherwise would be discarded? You say, as I understand you, that except that the filters would be a little choked up, you would just as soon take the additional flood water of the Thames?—Yes.

21,708. As water from Wales or Derbyshire or anywhere else?—Of course, I do not know much about the engineering of the Staines Reservoirs, but my impression would be that the water in the reservoir would be practically clear by the time it was taken out and put on to the filters; the subsidence would be so long.

21,709. The subsidence would be so long and so considerable that it would be practically clear when it issued from the Staines Reservoirs?—Yes.

(Mr. H. L. Cripps.) I thought, my Lord, it was not necessary to trouble Sir William Crookes to come back again to be cross-examined by counsel, and I did not want to discuss the matter in detail.

Thames?—No. It depends entirely on the state of the filtration.

21,714. Then what was the use of that diagram that we spent so much time over this morning, which showed a larger number of microbes when the river was low and a smaller number of microbes when the river was high?—That may be so; that depends entirely upon the efficiency of your filtration. It shows that even if you have a relatively pure water to begin with, you may not be getting it on the other side of your filters relatively improved in the same ratio as you have got it when you have a large number in the unfiltered water. You see, if you start with 100,000, let us say, in the unfiltered water, you are giving water on the other side that contains less than 100. But if you start with a river perhaps with only a thousand in a cubic centimetre, it is no better, and relatively the result of the purification is less if you take the ratio.

21,715. No, no, the diagram we saw gave the number of microbes per cubic centimetre?—Certainly, and I am taking it all through the same.

21,716. There was a larger number of microbes per cubic centimetre when the river was running low?—Do you speak of the river itself or the result of the filtered water?

21,717. No, the river itself?—Then I say that in all cases when the river has been running low, and there has been no rainfall, there are less bacteria in the raw river water—always. That is, if you have a period of no rainfall.

21,718. But then the diagram was exactly the other way. It showed more microbes in the filtered water when the river was running low?—Now you are speaking of the filtered water. I say that that may well occur—that the filtered water coming from a less contaminated microbic raw water is not so good as on other occasions—from a very highly contaminated raw water, and doing the same amount of filtration.

21,719. Then do let us get the result out if we can, one way or the other. In the filtered water are the microbes more numerous or less numerous according as the river is in flood or not?—No, not at all. It depends entirely upon the efficiency of filtration.

21,720. (*Sir John Dorington.*) In fact you do not trace any relation between the condition of the unfiltered water and the filtered water microbially?—No, not at all. You may have 100,000 microbes per cubic centimetre in the unfiltered water. You may have it bacterialess through one filter and 50 or 100 coming away in another one side by side.

21,721. In fact, the condition of the river has no relation to the bacteriological condition of the filtered water?—None whatever.

21,722. (*Chairman.*) Then that diagram is wholly misleading?—No, not at all.

21,723. (*Sir John Dorington.*) It shows what they found?—It is the result, I mean to say, simply of experience. You can see that if you have got a water that contains only a thousand to begin with, and you have to reduce it to below one hundred, you may be pressing that filter at such a rate that it is not giving the best results that it might do in comparison with a much larger amount of impure material to begin with.

21,724. (*Chairman.*) Then you have to import into your diagram the condition of the filters for the time being?—In every one of the results from day to day—it depends upon the condition of the filters.

21,725. Then, I repeat, the diagram so far as it conveyed any results, conveyed misleading results?—Then I cannot agree.

21,726. Let us have that diagram again, please?—The results in the case are effective. There can be no misleading results in the case of facts. You may misinterpret them, but they cannot be misleading. That is impossible.

21,727. Then I will say that if you like—that they have been misinterpreted?—They cannot be misleading. Science cannot be treated in that way.

21,728. Here is the diagram with the orange lines. That diagram shows, I will not say all through, but roughly speaking all through, the line of numbers of bacteria in the filtered water, increasing when the river is low, and decreasing when the river is high?—Yes, that may well be.

21,729. Then that is a purely accidental result and not a result due to the difference in the flow of the river?—Nothing to do with the river. It has entirely to do with the efficiency of the filters.

21,730. Then you mean to say that your filters may be less efficient when the river is low and more efficient when the river is high?—Not always—sometimes.

21,731. According to this diagram, always?—I say sometimes, not always.

21,732. According to this diagram always, it rises when the river is low and falls when the river is high?—Yes, but I mean to say you cannot say that it is an absolute consequence. You cannot go so far as that.

21,733. Then the inference we draw from this diagram is an entirely mistaken inference?—I do not think so.

21,734. The inference was that the bacteriological condition varies in the inverse proportion to the flow of the river?—If that was going to a physical relation, that was rather too prompt.

21,735. That was a mistake?—I would not go the length of saying it was a mistake absolutely.

21,736. A misinterpretation?—I think it is a slightly exaggerated interpretation.

21,737. A wholly exaggerated interpretation?—No, I would not say that, because I say it may be both, one way or the other. It depends upon the efficiency of your agent—your filter bed.

21,738. Then in construing what is likely to be a bacterialess outflow of Thames water, we may disregard entirely the condition of the river?—Entirely.

21,739. (*Major-General Scott.*) Does not it follow from that, that if you are going to take flood water habitually on to your filtering arrangements, you must have a larger number of filters than you would require if you are not going to take flood water?—I do not think so. I think it depends simply entirely upon the experience of the number of times that the filters would require cleaning. It does not necessarily follow.

21,740. But if you are going to take flood water habitually on to your filters, your filters will have to be cleaned oftener than they would be if you were not going to take it?—I assume so.

21,741. (*Chairman.*) Do not say you assume so. That will be so, will it not?—That, of course, depends entirely upon how long the filters will last. One filter will last so much longer than another.

21,742. Why?—That is just the point of this, experiments have to be worked out.

21,743. That is what we want you to explain to us. Why should one filter last longer than another one?—That depends upon the conditions to which it is subjected. If you are speaking of a bacteriological examination, it becomes slower or it becomes less effective, and that filter, therefore, has got to be washed and put into a new condition. It may not be from merely clogging up, but because it is now giving less effective bacteriological results.

21,744. That is because it is already chock full of bacteria, I suppose?—The explanation is very difficult. All this engineering filtration was done antecedent to any bacteriological examination at all. Even as late as the 1868 Report, no person dreamt that sand filtration removed bacteria at all. In fact it was entirely antagonistic to scientific opinion. It is only in recent years that we have found out that what engineers had done antecedently is quite competent to deal with these newer refinements which we never thought they would deal with at all.

21,745. (*Sir George Bruce.*) Did not Mr. Hawksley by a kind of intuition represent that something like that did take place?—Mr. Hawksley lived to see that. He was instrumental, of course, in recommending sand filtration and largely improved it and spread it over the country. He lived to see that it was proved that sand filtration not only removed suspended matter, but removed bacteriological living matter.

21,746. (*Major-General Scott.*) It may be accidental, of course, but is not there this coincidence, that water containing a greater amount of sediment would contain a greater amount of bacteria—speaking of the water of the Thames. If flood water contains a greater number of bacteria than water which is not flood water, and flood water contains a greater amount of sediment than water which is not flood water, does it not follow that water which contains a great number of bacteria

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Prof. J. Dewar. would generally contain a large amount of sediment?—No, not at all—quite the opposite.

17 Jan. '99 21,747. I should like to see how you make that out?—If you collect rain water in a glass vessel, you will find that rain water highly contaminated with bacteria.

21,748. I am not talking of rain water, I am talking of the Thames?—It is the same with the Thames. It is not necessarily the suspended matter that is objectionable. The suspended matter is rather an advantage in getting quit of bacteria. It is the suspended matter that does good. The segregation, the settlement, by means of solid matter in suspension is as effective for getting quit of bacteria as filtration.

21,749. But that is not my point?—I understood you were putting to me whether there was a necessary connexion between solid matter and bacteria.

21,750. I said an accidental connexion?—I should say not.

21,751. I say that for this reason, that if the Thames is in flood it carries necessarily a considerable amount of sediment?—Certainly, and all rivers do.

21,752. As it happens, when the Thames is in flood, it contains a considerable number of bacteria?—Yes, when it is not in flood after rain, you get the same increase without any solid matter at all.

21,753. That may be, but does not it follow from what I say, that when the river contains a considerable amount of sediment it will also generally speaking contain a considerable number of bacteria?—I think that is true. I may admit that at once.

21,754. That is the question I put to you?—I beg your pardon, I did not understand you; I think that is so.

21,755. Then the filters, when you are dealing with that kind of water, will be sooner choked?—I assume so. I assume mechanically choked, you mean.

21,756. Mechanically choked?—But as long as it filters the filtrate will be as good.

21,757. Yes, but still you will require, in order to work a given quantity of water, if you deal with that kind of water, a larger area of filters than you would require if you were dealing with water which did not contain that amount of sediment?—Or they would have to be oftener washed, so that, I say, it need not necessarily mean a larger area, but they would have to be oftener washed.

21,758. They are out of gear and out of work when they are washing?—I am assuming you have a proper plant—a proportionate plant, I mean to say—for the execution of a given amount of filtration.

21,759. But I say, if you are dealing with comparatively clear water, you need not have such an area of filters as if you are dealing with water that is full of sediment?—It depends altogether upon whether you are going to put in an instruction limiting the rate of filtration. If you are going to put in an instruction to limit the rate of filtration, it makes a difference. It is a very serious question. If you are going to say, because water does not contain suspended matter, and because it has stood in a reservoir, that you are going to run it through a filter at a different rate, then that is a very serious question. You are going to make your filters twice as efficient over a given area as it were by altering the rate of filtration, because you assume your water primarily is better, and I should object to that altogether most seriously. We know where we are, but we know not where we may be with regard to London water. We know what a given rate of filtration does, but that is a totally different question, to begin with, to altering the rate of filtration.

21,760. I do not think the question involves an alteration of the rate of filtration; so far it involves the complete stoppage of filtration?—Yes, and it involves the other thing, that you are going to run through what you assume to be better water quicker.

21,761. (Chairman.) Do you mean that better water quicker run through a filter will be worse?—Yes.

21,762. Than bad water slowly run through?—Clearly, very much worse.

21,763. (Major-General Scott.) But a filter gradually becomes clogged and the water runs through at a necessarily slow rate?—Yes, that is true, and then, of course, you wash your sand.

21,764. Therefore, the more filters you have to wash the more are out of work, and the larger number you have to keep in reserve in order to work during that time?—I am assuming that a properly managed plant is arranged for a given filtration, and I do not see any difficulty about it, whether the amount of suspended matter is half a grain or whether it is one grain.

21,765. It is a question of the area of filters?—It makes no difference whatever to an engineer, or anyone treating that water, whether the Thames contains half a grain of suspended matter or one grain.

21,766. It is a question of the area of filters?—In part, and washing these filters a little oftener. That is the whole question.

21,767. (Sir George Bruce.) And in order to wash them oftener you require to have a larger number standing idle?—Certainly; I have said I am assuming an efficient engineering plant.

21,768. (Chairman.) Then does this at least follow, that it is not desirable to take flood water unless you have sufficient engineering plant?—I cannot go that length, because I think that no engineer would do anything else.

21,769. I suppose some engineers are not perfect, or, I daresay, all engineers are perfect, but supposing one that is not, you would say to him, "You must not take flood water unless you have got sufficient filtering plant to keep your filters clean and efficient"?—I do not think he would do it. He would never dream of doing it.

21,770. I daresay he would not, but he ought not to do it if he were disposed to?—Of course, I assume that he could do nothing else.

21,771. Does your examination and the tests you have had enable you now to say what regulations ought to be laid down for the construction and management of filters, or is that a subject that still requires investigation?—That is a very difficult question.

21,772. Of course it is, and I want to know whether you can solve it?—No, I cannot—I mean to say off-hand—say that; but as Sir William Crookes has referred to it, I may at once confess to your Lordship that, having served on the late Commission, I felt it my duty to make it a condition, before becoming a colleague with Sir William Crookes, that substantially the terms of the Balfour Commission should be followed out, as represented in paragraphs 176 and 177.

21,773. I had that in my mind when I put the question?—The consequence was that I made it a condition that systematic bacteriological examination should be part of the duty of the Water Examiner, on the ground that having recommended that the powers of the Water Examiner should be extended, and the Commission having added that, in their opinion, regulations on these matters should be drawn up after a competent inquiry, and adherence to these regulations should be strictly enforced. I felt that a competent inquiry ought to be undertaken at once, and that competent inquiry that was required was the bacteriological examination on a large scale. It has not only been initiated by the water companies on these terms, but I may say that, after the first year's or year and a half's experience, I then boldly said we must now double this, in itself, effective examination, and instead of examining a few samples a week or a month, as has been done, we examined each water company every day.

21,774. Of course, I know the difficulty of the subject, but are you in a position to say what regulations ought to be laid down, as suggested by the Balfour Commission in paragraph 177?—I think that the conditions that we have suggested in paragraph 176 ought to be in the hands of the Water Examiner. We have suggested there that he ought to have the power to level up. Supposing it has been found out, let us say, after a year's experience of running and looking at records, that one water company has systematically produced a better result than another, the Water Examiner looks into the question and finds the area of the filter beds, he finds the construction of those filter beds, he compares that with the other companies, and he says, "Here is A. getting very much more effective results than you, B.; I must level you up; you must alter your filters correspondingly to the experience of the most modern results."

21,775. That points to saying that the Water Examiner should have the power to say what should be the area of the filtering beds, and the depth of sand?—Yes.

21,776. And the frequency of renewal?—Yes.

21,777. And the rate the water should be allowed to percolate?—Certainly, and I say so still. I adhere to every recommendation of the Balfour Commission.

21,778. No, forgive me, I do not think the Balfour Commission recommended that quite?—I think we did.

21,779. No, no?—With all due respect, yes.

21,780. Wait a minute. The Balfour Commission would be quite satisfied if the Water Examiner were able to say to a company: This water is not satisfactory; mend your filters yourself, and make it better?—Ah, but I think my Lord, if you will read between the lines here, you will see we meant that he ought to have more power than that, and to say: Your water is bad, make it better.

21,781. You think it desirable to take the responsibility of having good filters from the companies, and put it on the shoulders of the Water Examiner, so that if there should be bad water or a failure, it will be his fault, and not theirs?—No, I did not say that.

21,782. But it will be so, if he prescribes the materials and the mode of working—the responsibility will be his if they go wrong?—No, only in so far as levelling up to the best modern results is concerned, because he would not allow anything that was damaging—it would only be improving.

21,783. If, after his levelling up, a filter bed goes wrong, or the result is not what is desired, the responsibility would be his?—He would never move except on safe ground. He would not recommend something that was not going to be an improvement. That is not my experience of Water Examiners.

21,784. You admit, I suppose, that that would be shifting the responsibility from the companies, if the Water Examiner only looks at the results and says to a company: "Here, your water contains so much organic matter—it contains so many microbes—that will not do—you must give me better water next month;" and he would leave them to mend their filters in any way they thought right. That is leaving the responsibility with him. I think you suggest the responsibility should be shifted to him?—No, I never suggested that.

21,785. It would be so?—I cannot read it in that way.

21,786. But if he prescribes the depth of sand, the mode of working, the time of filtering, and all the rest of it, the responsibility must be his?—But then, that is after mature examination; that is after a certainly has been reached.

21,787. After anything you like, but the result is that the responsibility is his, if the result does not turn out what it was hoped to be?—But he would never act unless it was true.

21,788. That is assuming he is infallible?—It must have been the result, I mean to say, of long experience. As I say, he will not tolerate anything that is bad, he is only going to tolerate an improvement.

21,789. But, however, the point of all these questions is, do you really think it is a better system to have the Water Examiner telling the water companies exactly what they are to do, or to have the Water Examiner simply looking at the result produced by the water companies and saying, "This result will not do, you must mend your ways"?—Either might be equally good.

21,790. It is a totally different system?—Either might be equally good.

21,791. The one is throwing the whole responsibility on the Government official, and the other is throwing the responsibility upon the independent companies?—I never read it as throwing the responsibility upon the Government official.

21,792. That is inevitable—that is involved in your statement?—I do not agree.

21,793. (Sir John Dorington.) If the Government official prescribes a pattern, usually he is responsible, is he not?—Not when it is a mere question of improvement. He would never tolerate anything that was wrong. He would only level up to the latest results in some way or other of the companies getting better results than another. Therefore, it could never be in the way of error, otherwise there would be no science. To assume such a thing is to assume, therefore, no scientific progress.

21,794. But if you give him so much power, as you are suggesting, he might also exercise the further power of prescribing a pattern of his own?—But, of course, that is going into an entirely wide matter.

21,795. But how would you limit him by any regulation as to what he should prescribe? You give him the right to prescribe?—I have given him the right to level up, as I put it, from the experience which has been derived from a scientific examination of the results of other bodies.

21,796. That is to say, you would limit him to requiring that any one company should follow the example absolutely of any other company?—Certainly, if the results were good and worthy of that.

(Sir John Dorington.) I quite understand that.

21,797. (Chairman.) Supposing he had in his own mind a theory of filters which would be better than any others existing?—That cannot be tolerated in theory. That is a different question. We are dealing with a seriously practical question, although thoroughly scientific.

21,798. (Sir John Dorington.) That was why I wished to direct your attention to the difficulty, that the Examiner might have an idea of his own, which he wanted to work up?—I do not think Examiners like to have ideas of their own; they generally work upon other people's ideas.

21,799. (Chairman.) Then your regulations would run in this way: Power to the Examiner to require Company A. to do anything that Company B. was doing?—I would not put it so specific as that.

21,800. How would you put it?—It would be power to level up to the best modern results.

21,801. That is only putting in general terms what I am putting in concrete terms?—I see what you mean, and I have no doubt you can do that much better than I can.

21,802. I ask you whether that is not so—whether that is not the meaning of your suggestion—that the Water Examiner should have power to require any one company to do what any other company is doing?—Yes, provided it was a better result, and, in his mind, desirable and warranted. He would be a man of discretion, power and observation, thoroughly conversant with the facts, and one who would always act wisely in the interests of the community.

21,803. (Mr. De Bock Porter.) Do you suppose the companies would accept that suggestion?—I question it. I do not know. As I say, I express my own opinion. I am not expressing the companies' opinion. I have had no consultation with the companies, and no relation any more than Sir William Crookes has had: none whatever.

21,804. (Chairman.) In that way, you would get rid of any possible improvement by the company which, for the moment, is defaulting. I will take the case of a company, the result of whose work is in default, and the water not so good, the Water Examiner says: "This will not do; you must produce better water, otherwise you shall have to pay penalties," or whatever you like. The engineer of that company might set to work, and do something better than Company B. —I mean, you might lose the whole benefit of the initiative of the engineers of the defaulting companies?—I cannot see that.

21,805. You can get nothing but the Water Examiner imposing the net result of any one particular case?—But it is the net result, not of any one, it is the net result which has come out of a legitimate and sufficiently long scientific inquiry. For instance, may I just put it in this way? It might not be merely the thickness of the filters; but say it is found that a particular size of grain of sand acts more efficiently than another, and suppose the Water Examiner felt it advisable to say: "I have, from the results that I have seen, noted this, and I have got certain powers." Supposing you go as far as to give the Water Examiner power to recommend some inquiry, or let us say the representative of the Board of Trade, would it not be within his limit of power to say: "I suggest you ought to use that sand?"

21,806. Or to require?—Or to reduce it, I mean to say, to that size of mesh.

21,807. You suggest that it shall be in his power to order that size of grain of sand?—I do; that is, after sufficient inquiry.

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21,808. The engineer who is so required to use a particular size of sand might say: "But I have found, if I mix that size of sand with something else, I get a much better result"—Then that would not be after sufficient inquiry.

21,809. What?—I am assuming that it is after sufficient inquiry that this result has been arrived at. That is the only condition on which the Water Examiner would act. This is only a question of improvement, it is not a question of deleterious water, it is a question of improving on what is already good water; you see it always would be an improvement on already good water, because there is no bad water supplied.

21,810. (Mr. Mellor.) By whom would the sufficient inquiry take place, who is the person to make a sufficient inquiry?—The sufficient inquiry is being made by the accumulated results of the long experience of analyses that have been made by ourselves, and by our predecessors, and by Sir Edward Frankland on behalf of the Local Government Board.

21,811. Therefore, the requirement would come after your sufficient inquiry. That is what I want to know?—I say after the data have been accumulated that would warrant the Water Examiner in coming to some definite decision.

21,812. Then the Water Examiner is to require a particular kind of sand to be used?—I was putting an illustration.

21,813. (Chairman.) There are nothing like illustrations, because they enable one to know what is meant?—That is why I put it in that way. That was intended there in the paragraph that I have referred to in the Balfour Commission. It is put down in these broad lines—filter beds and depth of sand. If you summed up the whole paragraph 176 of the Balfour Commission you might put it in one line by obliterating the whole of that, and say the number of microbes shall not exceed, let us say, 200.

21,814. That is coming to what I suggested to you as the best test, namely, what is the result?—Yes.

21,815. If we look at the filtered water, we find it full of microbes, and we say to the company: "You must not furnish that water any more from your mains"?—Then I agree with your Lordship.

21,816. Do not say you agree with me, because I am only suggesting different points of view to you?—I am only saying I agree with you if you express it in that way—I shall put it so.

21,817. (Major-General Scott.) Would you be able now to define a combination in the way of subsidence reservoirs and filters constructively which would be the best?—No. I do not think any person—neither Dr. Dewar nor anybody else—could.

21,818. You could not?—No. What would you call the best?

21,819. The best combination for dealing with a given quantity of water. Has the bacteriological examination arrived at any definite result in regard to that?—Yes; I think the bacteriological definite result is this: that if you filter the London water supply at the rate of 2½ gallons per square foot per hour, as defined there, you have a water that is satisfactory—highly satisfactory. That is the result of experience, as I have said, antecedent to any bacteriological inquiry at all, but it has been proved conclusively, because the bacteriological inquiry is a much more delicate test of efficient filtration than any chemical examination—infinity more delicate—far more delicate.

21,820. (Mr. Mellor.) Are you referring to a filtration by sand?—Yes, entirely.

21,821. Sand alone?—Entirely sand filtration.

21,822. (Major-General Scott.) Now, take the case of the New River Company, and compare it with that of the Southwark and Vauxhall Company; the New River Company are dealing with the water of the Lea, which is generally in very good condition, and with a considerable quantity of well water mixed with their river water, and do not you think that they could afford to filter at a greater rate than the Southwark and Vauxhall, which at present is low in reservoir capacity?—No, I should say not. I should say that you want a separate inquiry, and a very dangerous one, to get the relation between the acceleration of filtration and the primary condition of water that you are going to filter.

I think that that would come to most serious difficulties. As I have said, we know that with that rate you cannot produce a bad result if your filter is in proper working order; but it is a different thing to put to me, because the primary water of the Lea is better than the Thames, why not double the rate of filtration? I say that would be most dangerous, because in doubling the rate of filtration, although your water may be twice or three times better to begin with, you are getting twice or three times those agents through that might be most serious to the community, and deleterious.

21,823. (Chairman.) But, however, I suppose you would agree with this, that it would be extremely unwise to lay down any fixed cast-iron code of regulations now, or, indeed, at any time; it would be far better to constitute some authority that should be able to vary the regulations from time to time?—Clearly, they must be left highly elastic, because this is an age of progress, and there has been no great progress made hitherto.

21,824. Your whole science, if I may so call it—I mean the whole science of bacteriology—is in its infancy, is it not?—Entirely, and, as I say, there could be no more remarkable illustration than the fact that as late as the 1868 Commission—as Sir Edward Frankland, who is here, I have no doubt will tell you—there was such a scare about water carrying disease that no person dreamt that sand filtration would remove these microbes at all. No person dreamt it—it was only Mr. Hawksley that maintained that the water was perfectly good. It was a later inquiry that proved that sand filtration actually removed microbes. Now it is the same thing in another way with this question. May I illustrate it while we are at it? If you produce a precipitate in water, of any kind—supposing you add to London water a drop or two of lime water—it just gives a little precipitate of carbonate of lime. That water now is nearly bacterialess—you do not require to filter it at all. The mere sedimentation carries down all these microbes with it. So suspended matter is of great advantage in flood water, in carrying down impurities, and in carrying down the microbes. Now, who could have believed a few years ago that by causing a precipitate in water of this kind you could carry down all the microbes without any filtration? No person would have believed it, but it is a fact, as Sir Edward Frankland will tell you. He has made many experiments, and he will tell you also about the variation in the microbes in the Thames after rain, without any flood at all.

21,825. So that one ought, as it were, to constitute some permanent authority that should have power from time to time to vary the regulations applicable to filtration?—But do we require variations of the filtration. You want to be safeguarded.

21,826. Yes, but I mean to point out from time to time what is the best mode of dealing with impure water, so as to make it pure?—But I think we have got that information now. There is no question whatever about it.

21,827. Yes, but you are not sure that you have got the best or cheapest mode now—I mean some better mode may turn up?—I know.

21,828. You have just suggested the addition of a little lime water?—I quite agree.

21,829. It may be it will be found in a few years that instead of going to the expense of a great mass of filters, and constant washings, and renewals, and so on, it will be enough to mix something with the Thames water which will produce that sedimentation, and so get rid of the microbes?—It might well be—it is possible.

21,830. Therefore, it would be wise to have your authority—that is, to establish the regulations mentioned in the Balfour Commission—a permanent authority, but with flexible powers, which would adapt itself to the state of knowledge at the time?—I quite agree.

21,831. (Major-General Scott.) I suppose you are acquainted with the regulations that are said to have been issued by the German Government and assumed to have been drawn up by Professor Koch?—I have not seen them.

21,832. (Mr. Mellor.) Do you think it desirable that there should be a system of private filtration in addition to the ordinary filtration?—No.

21,833. You think not?—No. Private filtrations are always a nuisance. They often add a great many more deleterious materials than the opposite.

21,834. Is that so with charcoal?—Yes, especially with charcoal, I may say. They work for a time well like all private filtrations, and then they become contaminated and you get a worse result very often.

21,835. What do you say to boiling the water?—If you boil water, of course you destroy everything.

21,836. (*Chairman.*) Have you had any experience of that Exeter plan which is said to destroy all microbes by mere shutting up?—I cannot say that I have, but I should strongly deprecate any alteration in the Thames Valley or the Lea in the disposal of the sewage, other than what has been in the past, until there has been a thorough, complete, and satisfactory proof that the newer methods are equally secure.

21,837. In fact, in the matter of sewage, you are a conservative?—Very strongly so: on the ground that my responsibility is great, and I can see that if you are going to introduce this, if one town is to be permitted to dispose of its sewage by a chemical process, a precipitation, and they are going to add what they call a little electrolytic chlorine, on the ground that some scientific experts—of high authority, I do not contradict it—say that a little free chlorine kills every moribund thing. Now, then, if we are going to throw this into the Thames, I object seriously, because I say you are going now to throw into the river an excessive quantity of organic matter that in the old way would have been disposed of on the land by exposure to light and vegetation, and so on—natural agencies; but, because it does not contain any deleterious organisms, you are going to charge the river fully by that organic matter. I say, no. Therefore, I say, that new process of sewage disposal I object to, although it may be in principle, and in scientific principle, correct. I say the same thing about this other method of proposed treatment. I do say that within the limits of the Thames and the Lea we know where we are, but we know not where we may be, and I do not want any novel process of sewage disposal introduced there until it has been most thoroughly and elaborately made certain.

21,838. I suppose sewage is not the worst source of contamination of the Thames, now that sewage farms have been introduced at most of the riverside towns; it is rather the surface manure and the foul ditches, and so on, that are the sources of contamination, is it not?—I do not think so; I mean to say that the whole of the district, the whole of the effluents have been largely improved, as Mr. Groves will tell you, from all the sewage farms.

21,839. I say the sewage is not so much a source of contamination as surface manures?—As to the mere general land character of the river water, that you have in all rivers, and the Thames is no exception. The only thing is the very large proportion of spring water in the Thames which is quite remarkable.

21,840. Where does that spring water come in?—It comes from the Chalk. For many months during the year the Thames is largely supplied by springs.

21,841. Whereabouts in the bed of the Thames do those come in?—They come in all over, and the engineers will point out where they are. It is a well known fact that in the case of the Thames, during many months in summer, it is substantially nearly spring water. Where it has been running all these months in the summer without any rain at all, it must have come simply from springs. The Thames water is really, though a river water, largely a spring water. It is quite an exceptional area. There is no such area in the United Kingdom for water supply as the Thames Valley, taking all in all.

21,842. (*Sir John Dorington.*) That means that the tributaries of the Thames supply an insensible quantity of water compared with what appears of itself in the river?—That is true. I say there is a large quantity that is undoubtedly from the Chalk coming from springs.

21,843. Not being brought in by any tributary, but rising in the bed of the Thames?—Entirely; there is no doubt of that.

21,844. (*Major-General Scott.*) Is it your opinion that year by year the filtration carried out by the companies has improved?—What do you mean?

21,845. Improved in results?—Do you mean that we have got better on the average?

21,846. On the average?—On the average, I think we may say that there have been much fewer breakdowns with filters or through suspended matter occurring casually now than formerly.

21,847. And the companies are taking steps, so far as their knowledge goes, to improve their filtration, are they not? They are adding fine sand to the filters in various quarters, and they are taking various measures of that sort?—The companies, as far as my experience goes, seem at once to follow any suggestion that we have made in these published reports, or by pointing out, as we have done, where there has been inefficient filtration. They are the first people who take fright. I assure you, I believe, they look upon us as their worst enemies.

Cross-examined by Mr. H. L. CRIPPS.

21,848. I understood you to say, in answer to one of the opening questions of the Chairman, that you considered the microbial condition of the raw water had no relation to the microbial condition of the filtered water?—I did.

21,849. I see that that is in accordance with a paragraph which you introduce into your report, "It has been shown over and over again in these reports that, as a matter of fact, the bacteriological quality of the London water supply does not depend on the use or rejection of flood water, but upon proper regulation and the efficiency of the filtration"?—That is true.

21,850. That is your ordinary statement?—Yes.

21,851. I want to refer you to a statement of Sir Edward Frankland in the Report for 1896-7, which is at page 214 of the 26th Annual Report of the Local Government Board. Sir Edward Frankland has there been dealing with various samples of water supplied by the London water companies. I do not want to go into any detail about those, but he begins in this way: "From this table it is seen that out of 34 samples, nine contained a number of microbes in excess of the standard; three of these were taken from three different filter-wells in the month of June, when the filtration plants of nearly every metropolitan water company, for some unexplained reason were simultaneously unable to perform efficiently their work of bacterial purification. Up to the present time I have endeavoured, in vain, to find an explanation of this singular phenomenon. If it had occurred only in one or two cases, it might have been attributed to accident or carelessness, but its general occurrence proves that the cause must be some condition or conditions affecting both metropolitan rivers." Do you concur with that?—I do. We had the same difficulty. We were in a state of great terror and fear on finding this large increase in the microbes, but we were calmed when we found it was general over the whole of the water supply, and, therefore, it could not be due to any one filter breaking down. We were communicating with the engineer, as it were, to suspend filter A and filter B, but when we found, then, that we should require to suspend everybody we saw that they would all be simultaneously breaking down, and that it must be due to some aerial pollution, some general atmospheric condition, and not due to the general action of the filters. Furthermore, it was proved that these microbes were utterly harmless.

21,852. I will just follow on: "Of the five companies drawing from the Thames, all, except the Southwark, were smitten with this microbial epidemic in June, and even the Southwark had got it on the 2nd of the following month. Of the two companies drawing from the Lea, the New River alone escaped, owing, no doubt, to the exceptional sources from which it derives its raw water." What you say now is hardly consistent, is it, with your observation before, that the microbial condition of the raw water had no relation to the microbial condition of the filtered water?—No, not at all. I mean to say that if you have got a general pollution of this kind brought about by some atmospheric cause, some climatic effect, just as we hear of the souring of milk in the old stories after a thunderstorm, or some effect of that kind, that does not interfere with my experience that the general result of filtration shows that when there are no abnormal circumstances the character of the filtered water, bacteriologically, is independent of the character of it before you began the filtration.

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21,853. Then, your opinion being that everything depends upon filtration if we take our water from the Thames—in which we very much agree with you—of course, the important question then becomes, how can we best guard against accidents in the filtration, in our management of the water supply; by what system can we obtain the greatest security against accidents, in so far as we are dependent upon the water derived from the Thames?—I say there are no accidents if you work your filters in a reasonable way. It is excessively rare that an accident occurs, the wonder is, I mean to say, it is not oftener.

21,854. I quoted a case to Sir William Crookes just now of the Southwark and Vauxhall Company; it was the case of a filter in the ineffective stage, and not disconnected; I will not go over it all again, but it turned out that there were no less than 16,000 microbes per cubic centimetre in No. 8 Filter Well?—I do not know that reference.

21,855. Let us begin at the beginning. I think you will agree with Sir William Crookes that there are eight filter wells?—I remember. I heard you put the question.

21,856. Supplied by 18 filters?—Yes.

21,857. So that the water in each filter well must be water mixed through different filters?—Necessarily; there is a certain number, of course, communicating with each filter well, but that does not interfere in the slightest with finding out that there is something wrong, whether it is with one of two filters, or one of three filters.

21,858. On the contrary, the fact that there were 16,000 microbes per cubic centimetre was found out, and it was remedied?—I have no doubt it would be. Who drew attention to this, may I ask? Is it from our reports?

21,859. It is from the Water Examiner's Report for December 1896, at page 11?—Of course, Sir Edward Frankland can tell you about that—he will be the authority.

(Chairman.) Sir Edward Frankland is coming before us.

21,860. (Mr. H. L. Cripps.) I understand you, that as regards the supplementary supply admitted to be necessary for London, you express rather a preference for the Thames flood water over water from any other source, on the ground that the dirtier the water the greater the security for filtration?—No; no such question was ever put to me.

21,861. Was not that the general result of your answers? I thought you said that nothing was gained by starting with a clear water, and that you were rather afraid that the filtration might be done too rapidly with clear water?—Speaking always of the Thames.

21,862. Speaking always of the Thames?—And of the Lea—the present London water supply.

21,863. As a chemist—and you are, we know, one of the most eminent—just let me ask you this question: Putting all other considerations aside, and dealing with the matter merely as a chemist, assuming that a certain deficiency in the water available for London has to be supplied, do you think it would be better to take the flood water of the River Thames, or fresh water from a new source?—That is a question of expediency.

21,864. I ask you your own view as a chemist?—If it is my view as a chemist that you want, I say, then, that the resultant water would do equally no damage to the community, whether it is the filtered Thames water, or whether it is the water from an area on which no human being is residing, and which you say, therefore, does not require any treatment at all. It would, in the end, therefore, be a question of expediency and cost, because in neither case that we assume would the water do any harm.

21,865. The questions of expediency and cost are rather different questions?—They are involved.

21,866. From the point of view of the chemist, do I understand that you prefer the flood-water of the Thames to water from a new source?—You see there are difficulties brought in in every way. If you go to a new source, then you have got to treat it from its own point of view. You will require now to avoid lead poisoning by the introduction of an exceedingly soft water. That is a question, therefore, that has to be treated. That will require a filtration for the purpose

of putting in carbonate of lime. You cannot use the waters of Wales without treating them antecedently, I declare, for private and public use, unless you are going to doctor them by preventing their action on lead, and that you can only do by adding precipitated carbonate of lime. You require a special treatment, you see, in each case. There are a number of other questions when you put it to me merely as a chemist—complicated questions which are involved.

21,867. At all events, your apprehensions about lead, which you now suggest, were fully considered by you, I recollect well, at the time when you gave evidence in support of the scheme of the Birmingham Corporation?—Yes. I said then that the waters would require in any case to be filtered through sand—calcareous sand—irrespective of whether the water was contaminated or not. You would require sand filtration now, but with a different object—for the purpose, practically, of making the water harder by getting some lime into it. But all that has been cleared up now, because a large number of the Midland towns—Sheffield, on my recommendation, Bradford, on my recommendation, Huddersfield, on my recommendation—add deliberately precipitated carbonate of lime to their water supply.

21,868. Perhaps I ought not to have wandered into that question, and I will not pursue that any farther; it will come at the proper time. But I want just to ask you this; I understood that in answer to a question from the noble Chairman, Sir William Crookes said that the water of the Thames, in a flood time, had no vicious characteristic other than that of occasionally blocking the filters—I think I followed his answer?—I did not know that he spoke about anything vicious in the water. I think what Sir William said was this, that we shall never find more than a grain and a half of suspended matter as compared with an average amount of, let us say, half a grain. That is what it comes to.

21,869. The tables appended to your reports, of course, show, according to every analysis, the quantity of oxygen required to oxidise the organic matter in samples of water from the mains of the companies?—Yes.

21,870. You are aware of that?—Yes.

21,871. And we have them all here?—You have them all back for 20 years.

21,872. Do you not find that there is a direct relation between the quantity of oxygen required to oxidise the organic matter in samples of water from the mains of the companies, and the extent or quantity of flood in the river Thames; in other words, if you put it in a tabular form, the quantity of oxygen required to oxidise organic matter varies exactly in proportion to the extent of flood in the Thames?—Yes. The moment you have a flood in the Thames, you have, as in all river districts, vegetable matter carried into solution, especially in the autumn, when you have falling leaves. A large quantity of vegetable matter gets into the water. The water becomes discoloured, it is peaty; of course, there is an increase in the peaty or vegetable matter necessarily involving an increase in the amount of oxygen the water will absorb. That is true.

21,873. Vegetable or animal matter?—I say that all the experience, both of ourselves and of Sir Edward Frankland, you will find is that it is substantially vegetable matter. You will find that is proved again and again.

21,874. Take, for instance, the last of your reports—I think it is the last I have here?—The last, I think, was issued yesterday.

21,875. I have the report for November 1898, that is the last but one; in that report you appended the usual tables; you remember you are dealing here with daily samples of water as supplied from the mains of the companies, that is, water after passing the filters?—Yes.

21,876. Take, for instance, the New River Company; I take that first because it is not a company deriving its water from the Thames; the oxygen required by the organic matter does not anywhere exceed '011?—You get the average at the bottom, it is '012.

21,877. I am reading from Table 3, '011?—And at the bottom of the page '012.

21,878. Very well, it is not very material; the East London Company's average is '033; the Chelsea Company, '033; the West Middlesex, '036; the Lambeth, '041; and the Southwark, '043?—Yes.

21,879. The point I want to get you to is this: the highest amount of oxygen required by the organic matter in the water of the Southwark and Vauxhall Company, after passing the filters, was '046 on one day—'043.

21,880. '053 on the 29th of November, and '054 on the 30th of November?—Yes.

20,881. And there are correspondingly high averages as regards all the other Thames companies?—Yes.

20,882. The quantity required by the New River Company for its water on the same days were '007 and '011; is that so?—Yes. The New River Company's water was quite different as regards that.

21,883. That shows that there is a considerable difference between the water of the Thames companies, after passing the filters, and the water of the New River Company?—Yes. It has always been so, and always will remain so. The New River Company's water contains much less organic matter in solution.

21,884. Have you looked at the condition of the Thames on those days?—I have not, but I know perfectly well that what all this amounts to is simply this: When there is an increase of colour, that shows an increase of vegetable matter, and you have an increase in the amount of oxygen absorbed. Nobody denies it, and it is admitted all through. In no case does it amount to anything like the peatiness of the Wales water.

21,885. (*Mr. Mellor.*) Do you think dead leaves are deleterious?—No, not at all.

21,886. (*Chairman.*) They are unpleasant?—They are unpleasant, and we do not like them. We want to have a water free from colour, and especially free from all suspended matter; but the freedom from colour, on the average, in the Thames water is quite remarkable.

21,887. You may drink the Nile, and it is as muddy or as dark as your hat, but it is very wholesome?—Of course there, there is an enormous dilution of any impurity.

21,888. (*Mr. H. L. Cripps.*) Do you agree generally to the proposition which I suggested, that the quantity of oxygen required to oxidise the organic matter in samples of water from the mains of the companies has a direct relation to the quantity of water flowing down the Thames; in other words, the higher the water in the Thames, the greater the quantity of oxygen required to oxidise the organic matter?—I think, as a rule, that would be so—it must be so—as a rule, I say. Wherever you have a large increase of water flowing into a river, dissolving, as it necessarily does, vegetable matter, there you have increase of colour and increase of oxygen absorbed.

(*Mr. H. L. Cripps.*) I do not want to discuss with you the composition of the organic matter which has so to be dealt with, because I think it is beyond the scope of the present inquiry, and I should not have asked you a question about it if it had not been for Sir William Crookes' former reply to the Chairman.

21,889. (*Sir John Dorington.*) You have said that the brown colour in the Welsh water is in excess of the brown colour in the Thames water?—Yes.

21,890. Would it require more oxygen to oxidise the Welsh water than the Thames water?—Yes.

21,891. It would?—Yes. The Welsh water will sometimes run like porter. The moment there is any water to collect, it is highly coloured; it is only, of course, diminished in colour by storage.

21,892. Then, so far as that is a test, that is disadvantageous to the Welsh water?—Undoubtedly, if you are going to speak of it merely as being objectionable because it is peaty. If you are going to raise an objection to the water on the ground of its colour, or of its containing peat, then, of course, it would be raising an objection to it.

21,893. But you do at present judge of water, as to its quality for potable purposes, to some extent by the colour?—Yes.

21,894. And by the quantity of oxygen required to oxidise the organic matter?—Yes, because I think nobody likes to have a peaty water, if he can avoid it.

21,895. So that, taking the two together, you would prefer the Thames to Wales?—Having regard to our experience of the present water supply of London, and the time that we have had it under thorough

examination, I see no reason to fear it in the future, any more than in the past, and a great deal less.

21,896. I was trying to ask you to draw a comparison with regard to Wales?—I have pointed out already that it brings in other questions other than the mere peat. It is a question, then, of bringing in an excessively soft water to London, which will require to be treated for other purposes in another way.

21,897. (*Mr. Mellor.*) Do they treat Loch Katrine water in that way?—No. The Loch Katrine water is one of those curious waters which, although it is peaty, does not act strongly upon lead. It was found out, as a very curious fact, that there are some peaty waters that do not act with the same power on lead; there are others that are perfectly mysterious, as in the cases of Sheffield, Bradford, and Huddersfield. There, during some months in the year, it dissolves lead at an extraordinary rate, and then at other times it ceases. The cause of that has been another mysterious thing—as to why a peaty water, or why a Midland water, should, on occasion, become so dangerous in its solvent power on lead.

21,898. What do you think of the Thirlmere water—the Manchester water?—That is an excellent water.

21,899. Does that dissolve lead in the same way?—No, not in the same way.

21,900. (*Chairman.*) There must be some chemical cause, I suppose, for that action?—Yes. There were two suggestions at first; first of all, that it depended upon the gradual oxidation of pyrites which, you see, occurs in the slate rocks, sulphide of iron giving free sulphuric acid during times, and that this then acted upon the lead. The other theory is that it is due to the peat, which is, of course, cellulose, or woody fibre under transition—that is what you may call it, woody fibre under transition—passing through certain organic acids, and these organic acids just behave in the same way as a mineral acid would do, in assisting the solvent action of lead and water.

21,901. It is not known why they act in some seasons, and not in others?—No; but we know now how to cure it. When I have been asked what is the explanation, I say I do not pretend to know the explanation, but I know the fact, and I know how to cure it.

21,902. Have you any idea as to how the Welsh water will behave as regards bacteria?—In the sense of what, do you mean—whether it will contain a large quantity?

21,903. Yes?—Of course, it will contain the same number as any other waters exposed to the air.

21,904. (*Sir John Dorington.*) Varying with the season?—Just exactly according to the rain—not a bit of difference.

21,905. (*Chairman.*) It might turn out that the Welsh water has got I do not know how many hundred bacteria per cubic centimetre?—Of course, the purest water that has been exposed to the air will contain bacteria. If you take the Kent water, it is, practically, germless when it is newly pumped; and, expose it to the air for half an hour, it becomes swarming with microbes.

21,906. Bless me! I thought I had learnt this morning that the best thing you could do with water, to kill the microbes, was to expose it to the air and the sunshine?—Yes, but that is not my experiment. If you give it long enough time, then they will all die out again. It is only to show you how you can be led astray. If you take a perfectly harmless water like the Kent water, and expose it to the air for half an hour, it then becomes full of bacteria, and they will go on growing at an enormous rate.

21,907. On the other hand, if you take a water full of bacteria, and expose it to air and sunshine, the bacteria all die?—Undoubtedly, if you give them time.

21,908. There seems to be a very great eccentricity about these bacteria?—That is the reason I am illustrating it, when you put the question to me whether the Welsh water be free, or anything like it, from bacteria.

21,909. You cannot tell, as you have, of course, no analyses?—I have chemical analyses, but I have not determined the bacteriological character of the water.

Prof. J. Dewar.

17 Jan. '99

Prof. J.
Dewar.

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21,910. (*Sir John Dorington.*) The only practical objection is as regards the brown colour?—As regards the peat.

21,911. The microbes would not be exceptional?—You would have all the atmospheric microbes, but you would have no morbid microbes if you take it from an area on which there was no human habitation; that is all.

21,912. (*Chairman.*) Will not sheep droppings, and so on, pollute the water?—They will pollute the water, but they will not send in disease germs which will attack man; they will pollute it organically, but they will not do any damage to it in the sense of its involving careful filtration. That is the point.

(*Mr. H. L. Cripps.*) Professor Dewar talks of the experience we have of Thames water; but, of course, we have no practical experience of the use of Thames flood-water.

(*Chairman.*) Surely.

(*Mr. Littler.*) Professor Dewar shakes his head at that.

21,913. (*Chairman.*) All the companies now pump their supplies, flood or no flood?—Yes.

21,914. And with no limitation by law, right on to their filter beds?—Clearly; they can do anything. But you have got the full statements, not only of their available storage, but also of the settlement.

21,915. Just clear my own mind; as I understand you, you say that the result produced, at present, by the companies is less than 100 bacteria per cubic centimetre?—Yes.

21,916. But if there were twenty thousand, they would do no harm?—Yes, but then you are making a proviso—it would depend upon the character of them.

21,917. Have you ever found morbid bacteria?—We have never found any, nor has anybody else.

21,918. Then I say, assuming that the bacteria remain as they are now, however many they were, it would not signify?—That is so—if they were of the same quality.

21,919. I say if they remain as they are now?—If they remain of the same quality as they are now, whether they are a hundred or two hundred per cubic centimetre would make no difference.

21,920. Then all this fuss about bacteria is mere idle talk, and it does not signify the least?—Well, with a limitation—I cannot go so far as that.

21,921. I want you to put me right?—I think, if you have got a water supply which comes from an area that is inhabited at all, you can always say there is the possibility of morbid poisoning of a living kind getting in, which you are bound to eliminate.

21,922. Then one of those would do to poison a whole district?—If the one got through and multiplied.

21,923. And multiplied?—Yes, but the conditions of multiplication, of course, would have to be considered.

21,924. Then you are not safe against the one because you have got 80 or 90 chances out of the 80 or 90 bacteria in the cubic centimetre, and there may be one that is pathogenic?—It is conceivable, but they have never been found.

21,925. But there are some of them in the river in all probability?—There may have been at one time, but the probability is they have been rapidly eliminated. There is no survivor of the fittest there.

21,926. But if a man gets typhoid at Staines, some of these typhoid bacilli will get into the river in all probability?—The probability is so.

21,927. And you are not sure of eliminating them even out of your 80 or 90 or a 100 that you have got in your cubic centimetre?—Further than the result of experience.

21,928. Have you ever had any experience of typhoid?—I say the whole of the statistics are against it. Of course, the question of disease in London, as connected with the supply, has been again and again gone into and there has never been an instance.

21,929. Is not that rather like the chance of 23 reds at roulette—I mean they do not come often, but they will turn up some day or other inevitably?—You see,

my Lord, if you go into such refinement, I am very delighted as far as I am concerned, because I will put it a little worse even than you. Suppose you say the water contains 100 microbes per cubic centimetre, that means that you have taken a small sample of water for the purpose of doing this delicate test. But you have only got to imagine that bacteria are very much like a cloud in the atmosphere, they are probably not uniformly distributed through the whole of the water, they may be far more concentrated at one little place than at another, so that this sample you are taking might not be absolutely a sample of the whole uniformity of it.

21,930. Well, what then?—You see you have to take out of thousands of gallons that have been taken and filtered a sample for the purpose of estimating this. It is a delicate question. You can easily see that. This is a living thing excessively small, it is not a soluble thing in the water like salt, which is the same everywhere where you take it. You can easily imagine that if you take a sample here and a sample there in the same way you can get 60 in one and 80 in the other. If you are going to the refinements my Lord is suggesting, they are excellent suggestions for scientific investigation.

21,931. I am only wanting to test your evidence?—I shall give you at once everything that I can.

21,932. I am only wanting to test as well as I can your view?—The difficulties of the problem I understand and I am fairly telling you everything I know.

(*Chairman.*) I am sure you are.

21,933. (*Mr. Mellor.*) You think, as I understand, that water has very little to do with disease?—I say that there has been no proof of the conveyance of disease by London water. There has been no water-carried disease. We know that all the examinations that have been made by specific bacteriologists to detect anything like a pathogenic organism in the filtered water has been a failure. Specific investigations have been made for the very purpose. Of course, you understand, we treat this bacteriological question purely from the practical chemical side as the most refined test of efficient filtration. We are not putting ourselves forward as specific bacteriologists, that is to say, bacteriologists in the thorough examination of whether a pathogenic organism is there or is not. But it has been undertaken by very competent persons.

21,934. By whom?—By Dr. Klein on behalf of the London County Council.

21,935. Then the London County Council may know more about it than you?—Yes.

21,936. Even you?—A great deal more.

(*Mr. H. L. Cripps.*) I was going to suggest, my Lord, that you should ask him whether he asserts as a matter of fact that the spread of typhoid in London has never been traced to London water.

(*Witness.*) That was in the case of certain polluted wells in the old days.

21,937. (*Mr. H. L. Cripps.*) No, I am alluding to Thames water?—I never heard of it.

21,938. You say, not?—I never heard of it.

21,939. (*Mr. De Bock Porter.*) There have been cases in other places, have there not, of conveyance of disease?—Yes.

21,940. For instance, the Worthing case is an established case, is it not?—Yes. There is no question at all about the possibility of it. Polluted wells have been a most serious cause of the transference of typhoid, and cholera in the same way.

21,941. (*Sir John Dorington.*) If you have got the wrong microbe in the Thames water, you might spread typhoid or any other disease appropriate to that particular microbe?—Provided the microbe could grow—provided, I mean to say, it was in a proper environment. Fortunately, these microbes cannot exist under the conditions of the Thames water and its filtration.

21,942. (*Chairman.*) Which conditions?—The conditions probably of exposure to light, the presence of suspended matter, and the absence of the natural materials that it can assimilate. The temperature, no doubt, is one of the conditions. In the Thames water it is not in the condition, of course, in which it could live as it lives in the animal economy. Consequently it dies off, and all the other harmless microbes are there to eat it up—just in the same way as we have

thousands of microbes in our own body—half a dozen in our own mouths—all specifically engaged in doing particular work.

21,943. And good work?—And good work.

21,944. (*Sir John Dorington.*) There is a beneficent and a morbid microbe?—Yes.

21,945. They make war on one another?—Undoubtedly.

21,946. (*Chairman.*) As far as your investigations are concerned, the beneficent microbes in the Thames must eat each other?—That is so. There was a time, not very long ago, when I was taught myself—as a student of chemistry, by the late Lord Playfair, who was a pupil of Liebig's—that all organic purification in Nature was due to oxidation.

21,947. In my school days we heard that?—We never heard of anything living having to do with oxidation and the purification of organic matter. We know now that the oxidation is an indirect effect of microbic life. Nitrification depends, it is true, on

oxidation, but the oxidation is effected by the microbe. The oxidation of the air will not do it itself, unless with the help of a microbe, so that the whole transitions in Nature now are microbic.

21,948. Do you mean to say, for instance, if I have a penknife, and leave it damp, and it rusts, that is, there is oxidation of iron?—That is the direct oxidation of the iron.

21,949. I hope there are no microbes there?—That does not involve microbic life. All organic transition, all organic change in the world, is entirely dependent on the living material that we are calling microbic life, otherwise there would be no transition. You know you can keep blood for an indefinite time, or any material such as urine, provided you have no microbe in contact with it; allow a microbe to come in contact with it, and you will have rapid transition, and ultimate purification, if exposed to light and air. So there is no purification in waters unless you have microbes—you cannot do anything without them—you can do absolutely nothing.

The witness withdrew.

Sir EDWARD FRANKLAND, K.C.B., called and examined.

21,950. (*Chairman.*) You inquire into the condition of the Thames water on behalf of the Local Government Board, do you not?—Yes, I do.

21,951. I think we know what the powers of the Local Government Board are; the Local Government Board has no absolute power of preventing the companies from taking water in flood times, I believe?—No, they have not; they have very little legal power at all over the companies.

21,952. Have the Local Government Board ever attempted beyond their legal power to restrain the companies from taking water in flood times?—I think so far as advice has been concerned they have, but they have not tried to compel them, I think, at all.

21,953. They could not, of course, if they have no legal right, but they have given advice not to take water at certain periods?—Yes, undoubtedly. I have done that myself, and the Water Examiner, I think, also has.

21,954. Has that advice been complied with as a rule by the companies?—So far as they could without detriment to their supply, I think, it has.

21,955. Do you mean that in the present condition of things the companies are sometimes obliged to take flood water?—Certainly, they are.

21,956. Do they put that flood water direct on to their filters, or do they pass it through reservoirs?—They generally pass it through reservoirs, I think. There is very little water going from the Thames or the Lea direct on to the filters.

21,957. (*Major-General Scott.*) I think the Southwark and Vauxhall have not sufficient reservoir capacity to altogether exclude flood water?—Certainly not, and many of the others have not. Nothing under 30 days as a minimum would entirely exclude flood water in the Thames, according to my experience.

21,958. They use their reservoir water as far as they can go, and then if the flood water continues to come down after they have exhausted their reservoirs, they necessarily have to take the flood water?—At such times they must deal with it direct.

21,959. Then that does happen?—That does happen, I have no doubt.

21,960. (*Chairman.*) That is not quite consistent with what you said to me just now, namely, that they always passed their water through their reservoirs before it went to the filters?—In the normal condition of things they do, but when their reservoirs get exhausted they must, of course, draw upon the river. There is also another condition of things that sometimes happens, that is, that water which has been impounded in the reservoirs during flood times is of less good quality than that which is flowing in the river, and it is sometimes better to take the water from the river than from the reservoirs.

21,961. In flood times?—No, not in flood times, but when flood water has been impounded in the reservoirs, which is very frequently the case, then it is better to take the water directly from the river, because it is chemically and even bacterially, perhaps, purer at the time.

21,962. (*Sir John Dorington.*) The other wants time to settle?—Yes. The other does not get so pure by the short settlement that it has.

21,963. (*Chairman.*) Does your experience enable you to say at what point of a flood it is safe, or expedient, or proper, to take the water for the purposes of the companies?—No, our information is not sufficient to enable anyone, I think, to give a direct answer to that question. What we want is a reservoir of considerable size, which should be devoted to this particular experiment: flood water at the very height of the floods should be taken into that reservoir, and it should be examined weekly for several months to see the effect of storage upon the water. No such experiment has been made, and it is impossible to say dogmatically at what period of the flood the water ought or ought not to be taken.

21,964. Then you could not condemn positively the taking of water in the beginning even of a flood to store in reservoirs?—No, not absolutely, but I think it would be in the present state of our knowledge unadvisable to take the very top of the flood, the first part of it especially, which, of course, includes the washing out of ditches, and fields in some cases.

21,965. I suppose floods generally come in the autumn and winter?—Yes, they do, and sometimes in the spring.

21,966. At the very time when manure is laid upon the ground?—Yes, it may be.

21,967. In the ordinary course of agriculture manure is put upon the ground between November and March?—It would be in the spring, certainly.

21,968. You have dealt more, I daresay, with chemistry than with agriculture, so I ought to apologise for putting that to you?—Yes, I am not very well acquainted with technical agriculture.

21,969. Then you would like this experiment that you have spoken of, of the storing of the water at all times of the flood, to precede anything like regulations on the subject?—Yes. I do not think that any legal regulations could be devised at the present moment which might not be harassing to the companies, and be ultimately found inexpedient.

21,970. Then you would not be prepared to recommend any regulations under paragraphs 176 and 177 of Lord Balfour's Commission?—No, I would not, without preliminary experiments of the kind I have mentioned.

21,971. (*Major-General Scott.*) Are there not a number of other questions with regard to the microbial condition of water which are still somewhat uncertain, for instance, the effect of filtration under various circumstances?—Yes, there are several matters which require clearing up before one could make definite rules, I think, with advantage. There is no doubt that storage enormously decreases the number of microbes; that I have certainly made out very clearly. How far that goes, however, has not yet been clearly established; but water that is taken in from the Thames containing, for instance, 40,000 or 50,000 microbes per cubic centimetre, will in the course of 15 or 20 days have the number of microbes reduced to 1,000 probably, or 1,500, so that the reduction is very great.

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21,972. (*Chairman.*) Is the character of these microbes fully established; I mean, may some of them become more mischievous than you expected?—No, I think nothing of that kind has been discovered.

21,973. Nothing of that sort?—Certainly not.

21,974. They do not go mad, as it were?—No.

21,975. Then you think further inquiry is necessary before any regulations could be laid down as to the management and storage of flood waters?—I think so, decidedly.

21,976. Have you any reason for upholding the suggestion—it was not the rule—but a suggestion made in Lord Balfour's Report, that 15 days' flood should be avoided?—Yes. I do not think that goes far enough. I think that every company ought to have at least 30 days' storage.

21,977. I am not asking you about the number of days' storage, but whether you ought to abstain from taking water from the Thames for 15 days after a flood?—I do not think that our information at present would enable me to answer that positively.

21,978. The Balfour Commission did not say that, but it was assumed as a reasonable limit by Messrs. Hunter and Fraser, I think, and the Balfour Commission simply reported that?—Yes, I think I remember that, but I do not think it is at all improbable that the very top of the flood might be taken in and rendered useful as a potable water supply—I say it is possible.

21,979. The result of the evidence of the two gentlemen who have favoured us with their opinions to-day is this, that although in a flood you find more microbes in the water, yet if proper filtration is applied to that water the result is the same—you come out free from microbes?—I cannot say that that quite accords with my own experience. They have, no doubt, in confirmation of their opinion, the opinion of the celebrated Dr. Koch who has said the same thing; but I have not found in my bacteriological determinations of the microbes in the raw Thames water and in the filtered waters supplied by the companies, that there is no relation between the number of microbes in the filtered water and that in the unfiltered. I find, as a rule, that when the Thames is very highly charged with microbes, the number in the filtered waters supplied by the companies is larger than it is when the Thames water is purer and freer from microbes.

21,980. If two such authorities as you and Professor Dewar and Sir William Crookes differ upon that point, it shows that the analyses are not to be implicitly relied upon?—I do not think it shows that. It shows that we are not yet quite in a condition to understand what the proper conditions of efficient bacterial filtration are.

21,981. Do you mean that your filters may have been not so good as the filters with which they had to deal?—That may be so, inasmuch as there are more than 20 of them.

21,982. It shows there is some doubt still hanging round the subject?—Certainly it wants further elucidating.

21,983. Have your tests led you to different results from what Sir William Crookes and Professor Dewar found, namely, that there are so many microbes when the river is in flood, and so many when the river is low? The contradiction between the diagram they put in and the evidence has put me in such a fog, that I hardly know where I am, but I certainly understood the spoken evidence of Professor Dewar to be that, in a time of flood, and when the river was high, there were many more microbes in the water?—Yes, I heard him say so to-day, and I quite agree with him there as regards the unfiltered river water. I have demonstrated that for several years past.

21,984. On the other hand, there were proportionately fewer microbes in the filtered water?—Proportionately less, I quite agree.

21,985. (*Sir John Dorington.*) On certain occasions, but not always—that is the position?—You can take out, by filtration, a larger percentage when there are many in your raw water than you can when there are only a few. I think that is probably the origin of the misunderstandings.

21,986. That is not a percentage, this is an actual quantity?—That is not in accordance with my actual observations.

21,987. In August 1895, the river was very high, and the microbes amounted to between 80 and 90 per cubic

centimetre; on the other hand, in September 1896, when the river was not in flood, but when there was a good deal of water, the microbes were extraordinarily low?—Yes, but that may have been accidental. It does not very well agree with my general results.

21,988. (*Chairman.*) Accidental? This is the mean. This the monthly average of all the tests, amounting to ten a day—it is something like an average of 1,500 tests. Just look at this diagram. (*Handing Sir William Crookes' first diagram to the witness.*) That diagram certainly conveyed to my mind the impression that in filtered water the average of microbes varied pretty closely in inverse ratio to the height of the river. The yellow line there shows the microbes in filtered water, and the black perpendicular lines show the height of the flood in the River Thames?—Take the case of 1895, when there is, according to the black line, a flood in the Thames; there is also a very large number of microbes. In June 1896, there is a case where there are very heavy floods, and a very small number of microbes. That is not quite in accordance with my results. It sometimes happens, but not invariably.

21,989. You have not got a diagram, have you?—No, I have not got a diagram to-day, but I will prepare one for you.

21,990. (*Sir John Dorington.*) Is it probable that the increased turbidity of the water at that time carried down a very much larger number of microbes and resulted in a better filtration of the water from microbes because of the settlement of the turbidity?—Yes.

21,991. In fact there was a more efficient filtration when the water was rather turbid?—Yes. I can quite imagine that, because we know that suspended matter is very potent in carrying down microbes. If you produce suspended matter artificially by Clark's process, for instance, you often reduce the microbes to zero. I have observed that repeatedly.

21,992. So that would rather explain the general tendency of the microbic line. That when the river is rather full and there are a great many microbes in the river, there are less microbes in the filtered water because the filtration is more perfect owing to the sedimentation of the water?—Yes, but I think there is also another thing of a biological character which probably comes in there, although what I am going to say now is theory and has not yet been demonstrated. I think it is exceedingly likely that these microbes are arrested on the sand filters by organisms of a rather higher type. These last are what are called microscopic organisms, such as rotifera and infusorial organisms of that kind—enormously large, elephants, in comparison with mice as regards microbes. These somewhat higher organisms, according to my view of the matter, prey upon the microbes; the latter are their food, just as these microscopic organisms are the food of fishes. It may be, therefore, that when the Thames is in flood and when it is bringing down a specially large number of these mammoth microscopical organisms, that the filtration may then be more perfect than it would be when the Thames is running chiefly spring water. That leads me also to another thing, which is not theory but fact, that if you filter spring water, you increase the number of microbes in it, instead of diminishing them—invariably, so far as my experience goes.

21,993. (*Chairman.*) Why is that? Because you stop all the elephants, or what?—Yes, there are no elephants then on the sand to prey upon the microbes, and, consequently, there is a very considerable augmentation: they multiply in the pores of the filter, and in the conduits of the filter below. That is a fact.

21,994. Then you are agreed with the other gentlemen, that the microbes in the raw water do increase, as they say, with the flood?—Yes.

21,995. (*Major-General Scott.*) I understood you to say that, although there is a larger percentage of microbes filtered out in flood water, still, that does not overcome altogether the excess number; and you find in the filtrate a larger number of microbes than there is when you filter water that is not flood water?—Yes, when you filter river water?

21,996. Taking the Thames water, I think, at the beginning of your examination (but I was not quite clear about it), you stated, as a general fact, that in the filtrate of flood water there were more microbes as a rule than in the filtrate of water that was not flood water?—Yes, that I have found as a rule.

21,997. Afterwards you qualified that by stating that there was a greater proportion of microbes excluded from flood water than there was in the case of water that was not flood water?—Yes; but I did not intend it to qualify my answer, because the absolute number I have found is, as a rule, always greater in flood water than it is when the river is running at the ordinary level. But when you come to give the percentage of microbes removed by the filters, you get a higher number with flood water than you do with ordinary

river water; that is to say, the filters take out a larger proportion from flood water than they do from purer water. As I have just now said, if the water were pure spring water, they not only would not take anything out, but they actually allow the microbes to increase in the filter.

21,997a. (*Mr. Mellor.*) They must be harmless microbes, I suppose, in the spring water?—So far as it is known, they are all harmless. No one has yet discovered, even in the raw Thames water, a harmful microbe.

*Sir E.
Frankland
K.C.B.*

17 Jan. '99

Recalled,
Q. 28,775.

The witness withdrew.

[Adjourned to Monday next, at 12 o'clock.]

FORTY-FIFTH DAY.

Monday, January 23rd, 1899.

23 Jan. 99

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.O., M.P.
Sir JOHN EDWARD DORINGTON, Bart., M.P.
ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
HENRY WILLIAM CRIPPS, Esq., Q.O.
ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.O., and Mr. Freeman, Q.O., appeared as Counsel for the London County Council.
Mr. Pope, Q.O., and Mr. Claude Baggallay, Q.O., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.
Mr. Littler, Q.O., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

21,998. (*Mr. Balfour Browne.*) My Lord, before my learned friends go on with their case, would you kindly allow me to say that if anything I said last week was construed into an idea that we were not going to give Colonel Rathborne all the information we possibly could, it was entirely erroneous. We desire, of course, to place every means of information at his disposal, and I am glad to hear that already Sir Alexander Binnie is in communication with Colonel Rathborne, as to certain information which he wants. Then, my Lord, on another matter you asked more than once—and it is only in answer to your Lordship's question at Question 21,440, when Mr. Eaton was in the witness box, that I say this:—"Can you give us any idea of what sort of sized stream the Thames would be below the lowest lock if only 100 million gallons a day came over that lock?" and your Lordship asked a similar question of Mr. Hawksley at Question 20,748. Of course, it is difficult to answer that in words; but Mr. Deacon has been good enough to put upon a diagram an answer to your Lordship's question (*handing diagram to the noble Chairman.*) I will hand one to my learned friends. Your Lordship will see that this is a section, not our section, but the Thames Conservancy section, showing the bed of the river at a place a little below Richmond Weir. It is the nearest section of the Thames Conservancy to Richmond Weir. It shows the height of the water at high tide in light blue. It shows the amount of surface that would be covered by the 200 million gallons at that point; and it also shows, in a darker blue still, what would be covered by 100 million

gallons. Above, you will see that the idea Mr. Eaton had, that any vessel could float there, is entirely erroneous. Mr. Eaton said, at Question 21,443:—"I imagine that there would be an ample supply of water there to float any vessel, that is, any barge or craft that would be likely to want to get up there, across the whole width of the Thames." Your Lordship will see the depths given as 200 million gallons and 100 million gallons; and, taking the latter as the worst, the maximum depth at any one point, that is merely at the apex of the triangle, is 3 feet. Then there is an available width over the surface of 20 feet of 1 foot 9 inches, 40 feet of 9 inches, and 60 feet of 4 inches.

(*Mr. Pope.*) I do not quite follow this. Is there any allowance for the tidal water, or is it merely the measurement which the 200 million gallons would occupy if there was nothing else in the bed of the river?

(*Mr. Balfour Browne.*) The tidal water. It is shown in light blue.

(*Mr. Pope.*) It is only the height of the water.

(*Mr. Balfour Browne.*) That is the height of the water at high tide. The darker blue is what the 200 million gallons would cover when the tide is down.

(*Mr. Pope.*) At low water.

(*Mr. Pember.*) That is for one minute.

(*Mr. Balfour Browne.*) At low water.

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(*Mr. Pope.*) Then the whole of the rest of the time there is a certain proportion of tidal water.

(*Mr. Balfour Browne.*) Forgive me, it is not one minute, but five hours.

(*Mr. Pope.*) It is not low water for five hours.

(*Mr. Balfour Browne.*) Yes, indeed, it is.

(*Mr. Pember.*) Then it is a very funny river.

(*Mr. H. W. Cripps.*) Take that for whatever it is worth.

(*Mr. Balfour Browne.*) Certainly.

(*Mr. H. W. Cripps.*) The bearings of it are a different thing altogether.

(*Mr. Balfour Browne.*) Yes. I do not want to go into this question as to whether the deprivation of flood water will injure the Thames below Richmond Weir. We hold a very strong opinion that it will, and at the right time, if your Lordship wants to go into it, we are prepared to prove that it will, and the taking away of these flood waters, which they say they can take, would cause silting and injury to the river; but at the same time, my Lord, I think it is a little foreign to your Lordship's enquiry to-day, and, therefore, I do not want to go into it. I only put this in in answer to your Lordship's own question, that you wanted to see what it was like.

(*Chairman.*) I want to understand your diagram. Where is Richmond Weir on the diagram?

(*Mr. Balfour Browne.*) Richmond Weir is just a little above this section. This is just below Richmond Weir, 460 yards below Richmond Weir. The section is not our section but it shows the bed of the river of the Conservators.

(*Chairman.*) Very well. Then do I understand that when 200 million gallons are going over what I suppose is now Richmond Weir—

(*Mr. Balfour Browne.*) It would be over Richmond Weir.

(*Chairman.*) Do I understand that then the whole of this part of the bed of the river is high and dry.

(*Mr. Balfour Browne.*) All that down to that point, and on the other side.

(*Chairman.*) From this little part?

(*Mr. Balfour Browne.*) Yes, that is so.

(*Chairman.*) The whole of that is dry?

(*Mr. Balfour Browne.*) The whole of that is absolutely uncovered.

(*Chairman.*) Across the whole width of the river?

(*Mr. Balfour Browne.*) Across the whole width of the river. Of course, in the centre it is covered with water, but these two portions that you pointed out are absolutely dry at that point.

(*Chairman.*) Whereabouts in the river is this section taken?

(*Mr. Balfour Browne.*) 460 yards below Richmond Weir.

(*Chairman.*) Yes; but at what part of the width of the river?

(*Mr. Balfour Browne.*) It is the whole width from bank to bank, and it is right across the river.

(*Chairman.*) I see.

(*Mr. Pember.*) Recollect this section is ten years old.

(*Mr. Balfour Browne.*) It is a good deal worse now. But we have taken, you see, not our own section, but the last available section of the Thames Conservancy.

(*Mr. Pope.*) I am sure you will forgive me saying it, but you have spoken of the taking of flood water; but this diagram has absolutely no reference to the taking of flood water.

(*Chairman.*) No.

(*Mr. Pope.*) It is simply on the question of 200 millions or 100 million gallons going over Teddington Weir.

(*Mr. Balfour Browne.*) I beg your pardon; it is closely connected with the taking of flood water.

(*Chairman.*) You say so, Mr. Browne, but I do not quite see it.

(*Mr. Balfour Browne.*) Because we know that the flood water is not that alone which preserves the régime of the river. If there were only flood water

coming up, and flood water going down, the Thames would inevitably silt up over its whole length. It is this small amount of dry weather flow which helps the oscillation downwards and keeps the régime of the river in its present condition. But, of course it is a very large question, and if I may so, I do not think it is a very essential part of the inquiry your Lordship is embarking on. Incidentally it may come in, but if your Lordship wants to go into it, it will take a great deal of time.

(*Chairman.*) It has a material bearing upon the cost of the reservoir scheme.

(*Mr. Pope.*) That is all.

(*Mr. Balfour Browne.*) It has in this way: that if they are not allowed to take the flood water, they cannot give the supply that they are saying they can give from the Thames, and we say they should not be allowed to take the flood water, and they should not be allowed to reduce the minimum ever below 200 million gallons.

(*Mr. Pember.*) It would have made it still more interesting, if it is interesting at all yet, just to see the 250 million gallons line drawn above the 200 million gallons, and to see how much it would have added.

(*Chairman.*) I suppose it would have added a little less than the difference between the 100 and 200 million gallons?

(*Mr. Pember.*) Yes.

(*Sir John Dorington.*) Is this 200 million gallons divided by 24 hours, or is it divided by the number of hours during which the backed-up water of 200 million gallons could flow when the rise of the tide permitted it to run?

(*Mr. Balfour Browne.*) No. I think this merely represents 200 million gallons uniform flow over the weir.

(*Sir John Dorington.*) Then that would not be at all the case, would it?

(*Mr. Balfour Browne.*) Yes, it might be the case.

(*Sir John Dorington.*) No, it could not be.

(*Mr. Balfour Browne.*) Of course, it might be a great deal worse, as we know, because they are not going to guarantee 200 or 100 million gallons a day, and we know that in one particular day it went down to 42 million gallons.

(*Sir John Dorington.*) The 200 million gallons would not be flowing down while the tide was running up after it had risen above a certain level.

(*Mr. Balfour Browne.*) Over Teddington Weir it would.

(*Sir John Dorington.*) Quite so.

(*Mr. Balfour Browne.*) Because the tide does not go over Teddington Weir.

(*Sir John Dorington.*) Quite so, but when you arrived at Richmond Weir, that 200 million gallons could only be running down the river during certain hours of the day, and not during the 24 hours.

(*Mr. Balfour Browne.*) True.

(*Mr. Pember.*) It would be banked up.

(*Mr. Balfour Browne.*) It would be banked up to a certain extent, and it is because of that banking up you get the greater flow of water and scour which washes the river.

(*Sir John Dorington.*) Does not that vitiate the diagram?

(*Mr. Balfour Browne.*) No, I think not.

(*Sir John Dorington.*) The 200 million gallons which is running, and which is backed up, would only get over during three hours of the day instead of 24.

(*Mr. Balfour Browne.*) I think his Lordship by his question merely wanted to see diagrammatically (because it seems to show that) what the depth would be above if there were no tidal water running in the river, and that shows how much the bank would be uncovered for a certain time at the lowest tide. That is the time when the river would be at the lowest tide, and when no barge could get up.

(*Mr. Pope.*) It merely shows the sectional area of the river which would be covered by the 200 and 100 million gallons.

(*Mr. Balfour Browne.*) As I say, it is connected with the question, but we do not think it directly bears on it; but if your Lordship wants to go into it, it means a

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very long examination into the régime of the River Thames.

(Mr. H. W. Cripps.) I do not see, speaking for myself, that we have anything at all to do with that matter.

(Mr. Balfour Browne.) Nor do I. I am only giving it to his Lordship.

(Mr. Pember.) May we dismiss it then, my Lord, because if it is to be gone into after all, it should be substantiated thoroughly. But if not, it is as useless as it can be.

(Chairman.) As I understand, it is merely a picture of what 200 million gallons running over Teddington Weir would represent in the bed of the Thames below Richmond Weir if nothing else was there.

(Mr. Balfour Browne.) Mr. Pember is not condemning our diagram, but your Lordship's question.

(Mr. Pember.) Mr. Pember can take care of himself, thanks, and I am sure your Lordship can; but what I say is that the picture is not valuable unless the whole bearings of it are thoroughly made clear, and whether it is to be of value then, of course I leave; but in the meantime it is perfectly clear that in order to make it of any possible value, we must have a very long inquiry, because I know enough from experience in other matters as to other rivers to know that we should have a vast deal of argument for and against on this question of scour, for instance, and all the rest of it, and also it would involve a very long argument as to whether it would illustrate at all the question of the necessity of our taking flood water.

(Mr. Balfour Browne.) I agree that if you are to inquire into the régime of the River Thames, and how it is preserved, it would involve a very long inquiry indeed, but I thought it would do no harm to answer your Lordship's question.

(Mr. H. W. Cripps.) Do you agree with me that it has nothing to do with this inquiry?

(Mr. Pember.) There is another thing which we should want to know—the velocity at which this 200 million gallons is coming down. The question of uniformity and velocity would have a very great deal to do with this pretty picture.

(Mr. Littler.) And I can foresee, my Lord, another thing: The Thames Conservancy would have a word to say on it, if it is to be gone into.

(Chairman.) One result of this diagram appears to me to be that the difference between the 200 millions and the 100 million gallons is very insignificant.

Mr. CHARLES EDWARD GROVES, F.R.S., called and examined.

Mr. C. E. Groves, F.R.S.

21,998a. (Witness.) My Lord, before I commence, might I make one observation in reference to what has just passed? I speak, as you know, as chemist to the Thames Conservancy, and I believe that that drawing refers to a time before the Richmond Weir was in action, and therefore it does not refer at all to the present state of the river. I speak subject to correction.

(Mr. Balfour Browne.) It bears upon its face that the section was 1888.

(Chairman.) It is what the river would have been in 1894 if there had been nothing but 200 or 100 million gallons respectively coming over the river.

(Witness.) But not at the present time.

(Mr. Balfour Browne.) In good time, I daresay we shall show how it is now.

21,999. (Chairman.) You say you are chemist to the Thames Conservancy?—Yes, I am chemist to the Thames Conservancy.

22,000. How long have you filled that position?—Since 1884.

22,001. (Mr. H. W. Cripps.) That would be the old Thames Conservancy, of course?—Yes, the old Thames Conservancy.

22,002. Then you went on with the new one?—Then I went on with the new one. I have had the river under my observation during the past 16 years.

22,003. (Chairman.) What sort of observations of the Thames water do you make?—Comparatively few of the Thames water itself. It is mainly of the effluents which pass into it.

22,004. You have made no examination of the water supplied by the water companies, have you?—Not of the water supplied by the water companies.

(Mr. Pember.) Yes.

(Mr. Balfour Browne.) It is not that exactly. You will see that between those blue triangles there is a large piece that is covered by the 200 million gallons.

(Chairman.) Yes, that is just covered.

(Mr. Balfour Browne.) It has got I do not know how many feet of water there.

(Mr. Pember.) Three feet.

(Mr. Balfour Browne.) The difference is given up above. It is assuming a foot of water over it—10 inches of water over it.

(Mr. Pember.) If you say it is down at the apex of the deepest triangle three feet, it is obvious there cannot be many feet in that little bit.

(Mr. Balfour Browne.) You have both, because you have the maximum of one, and the maximum of the other, and the maximum of the 200 millions is 10 inches higher than the maximum of the other.

(Sir John Dorington.) The vertical and horizontal scales are the same here, are they?

(Mr. Balfour Browne.) Yes.

(Mr. Littler.) That is assuming everything to be equal, and it is at one given minute of the lowest ebb tide.

(Mr. Balfour Browne.) I beg your pardon, it is three to five hours.

(Mr. Pope.) I beg your pardon, that is impossible because there is tidal water during those three or five hours which would alter it.

(Mr. Balfour Browne.) No, there is not, indeed.

(Mr. Pope.) There must indeed be, or else the diagram does not represent the fact.

(Mr. Pember.) There is a question of water being let down from Richmond Weir which has not been considered.

(Mr. Pope.) It is a diagram which, like so many diagrams, does not represent the actual facts.

(Mr. Pember.) The diagram is ten years old, and longer.

(Mr. Balfour Browne.) The river has silted up considerably since then.

(Chairman.) I understand Sir Edward Frankland cannot be here to-day.

(Mr. Pember.) I am afraid not, my Lord.

(Chairman.) Then is Mr. Groves here?

(Mr. Pope.) Yes.

22,005. Only the water of the Thames itself?—The water of the Thames itself, especially in the neighbourhood of the intakes of the water companies.

22,006. I believe we may take it generally that there has been a great improvement in the quality of the river water since the passing of the Thames Conservancy Act of 1894?—That is so; and that is shown in some tables which I have prepared.

22,007. Perhaps we had better have those tables put in?—You will see from Tables 1, 2, and 3, what the state of the river with regard to organic pollution was in May 1891 to 1892. Then in 1893 you will see it came down from '13 parts to '117. You will see that the amount of polluting matter has diminished to about two-thirds of what it was before the passing of the Act. (The witness handed in Tables 1, 2, and 3. See Appendix O, 1, 2 and 3.)

22,008. (Mr. Pember.) Is it contrasting January 1892 with January 1897?—No, contrasting the average of the year 1893 with the year 1897.

22,009. (Chairman.) And the average of the year 1891–92?—Those are a few samples taken in 1891–92, just to show what the state of the river was somewhat earlier.

22,010. I see; to contrast 1893 with 1897, then, you have an improvement of two-thirds?—It is as '117 to '083.

22,011. But that is leaving out May?—But the May samples were quite abnormal, as you see. It is just on the day on which they were taken—we only took them on one day in May. There is a considerable number of samples taken on one day.

22,012. Five samples, I see?—Five samples.

Mr. C. E. Groves, F.R.S. 22,013. Five samples once a month, or is it not that?—Every two months.

22,014. Can you say which of these samples are taken in flood time and which not?—All those are taken when there was no flood, that is to say, no great flood. I have also prepared some tables which show the flood waters.

22,015. Then these Tables 1, 2, and 3 are all samples of the river when it was not in flood?—All samples of the river when it was not in flood.

22,016. Table 3 is the result of the examinations of 1898?—Yes, 1898, which, you see, are quite exceptional.

22,017. Exceptional?—They are higher than they were in 1897, and they vary considerably more.

22,018. There again May seems to have been a bad month?—Yes, May was a bad month in that year.

22,019. What inference are we to draw from that, that 1898 is worse than 1897?—That 1898 was slightly worse than 1897. This is quite easy to explain; 1897 was an average year, and large quantities of rain water came down the river, and also the spring water which comes up from the bed of the river. In 1898, when during most of the year there was an exceedingly dry season, comparatively small quantities of rain water and also, naturally, comparatively small quantities of the spring water which comes up in such enormous quantities into the bed of the river made its appearance. Therefore the matter which came down from the towns, the sewage matter that is, was less diluted, in other words, there was not the average quantity of water in the river; that is the explanation.

22,020. (*Sir John Dorington.*) The May of 1897 and the May of 1898 were apparently just the same?—They both happened to be just the same. That is a mere coincidence.

22,021. (*Major-General Scott.*) At the same time, a flood has the effect, generally speaking, of increasing the organic impurity, has it not?—Shall we pass on to the flood waters now? Perhaps it would be better to consider each one separately.

(*Chairman.*) Very well.

22,022. (*Major-General Scott.*) I am referring to this. You attribute the increase of organic elements in 1898 to the small amount of rain?—Yes, to the small amount of rain.

22,023. Then do you therefore allow that there is an increase, generally speaking, in the case of rain—that seems a contradiction?—An increase in the case of rain itself?

22,024. Yes, an increase in the organic elements?—No, not unless it is in flood.

22,025. That means rain, does it not?—Not quite the same thing. If the quantity of rain which falls filters through the earth and comes up as springs, then of course that is comparatively pure, and it simply dilutes the river water. It is pure water that you put into the river. If you have a large quantity of rain, when the rain runs over the surface, you wash the surface and you put in the impurities which are on the surface.

(*Major-General Scott.*) I see your distinction.

22,026. (*Mr. De Bock Porter.*) Is May an exceptionally bad month?—No.

22,027. Merely a coincidence?—Merely a coincidence.

22,028. (*Chairman.*) I see, on the whole, on the average 1898 is better than 1897?—1897 is better than 1898.

(*Mr. Pember.*) I understood the witness to let drop with reference to the question which your honourable colleague asked, that that May was abnormal, because there was a sudden amount of very great rain in the midst of a drought.

(*Witness.*) There was a rain, but I do not attribute it entirely to that. I cannot conscientiously say it. I have no explanation about it.

22,029. (*Chairman.*) Just to keep to one point at a time, 1898 is upon the whole better than 1897 on the average?—Not if we take the whole average. If you take the average of the four samples of 1898 as against the six of 1897, it is better.

22,030. But taking the average of your table, omitting May?—Omitting May, it is '083 in 1897, and omitting May in 1898, it is '091.

(*Chairman.*) I see. Then May is included in the '094 of 1897.

22,031. (*Sir John Dorington.*) Are these samples taken on dates which are fixed beforehand, or when you think the river is in a suitable condition to take them?—The chief inspector has a very great amount of experience in the matter, and he fixes the times when they shall be taken.

22,032. (*Chairman.*) Does he fix the time when he thinks the river is likely to be bad, or when the river is likely to be good?—No, he fixes it when he thinks it will be an average state of the river.

22,033. (*Sir John Dorington.*) He selects his days?—He selects his days; practically they are always taken within a week or 10 days of the same time. I have not got the actual dates down here, but they are always taken within about a week or 10 days of the same time.

22,034. (*Chairman.*) Now, you have got tables relating to the flood water, I think?—Yes; and I have also a statement which I have made on the effects of the floods on the purity of the water. I point out that the flood waters, as a rule, are distinctly turbid.

22,035. Yes?—They may be very turbid. It is only by standing some time that the suspended matter can be separated. By simple filtration through paper it is impossible to separate the whole of that suspended matter. The suspended matter contains a comparatively large proportion of organic pollution; so that if you allow it to settle for a time till the whole of it has gone down, you will find that the flood waters are very greatly purified, and I will put in Tables 4 and 5, from which you will see how I deal with it.

(*Witness handed in Tables 4 and 5. See Appendix O, 4 and 5.*)

22,036. What does Table 4 show?—Table 4 is flood waters in 1892.

22,037. (*Mr. Pember.*) And 1898?—1892 first of all, then 1898.

22,038. (*Chairman.*) I see in 1892 the average of four samples was '43 of organic matter?—Yes, '43 of organic matter. That was an exceedingly large flood, one of the largest we have had. I wished to see what the state of the water in the Thames was at these very bad floods, and I specially asked for samples to be taken, so that this gives probably the most polluted flood that you could find—it is the very highest amount of pollution.

22,039. (*Major-General Scott.*) Is that Table 4?—No, Table 4. You get the flood waters there.

22,040. (*Mr. H. W. Cripps.*) I do not see the object of taking that?—This was quite an exceptional flood.

22,041. Therefore, what took place exactly at that exceptional time does not bear much upon the question?—No, except that it shows what would be the largest possible amount of organic pollution that you could get.

22,042. (*Chairman.*) Have you got any samples of an ordinary flood?—Yes; these come immediately afterwards.

22,043. Very well, we will deal with Table 4 at present. Then you have got a certain number of samples of flood water taken in 1898?—Yes; that is the first flood that occurred since the drought.

22,044. Was there anything of a flood in October, 1898?—Yes. It was a flood: it was considered by the inspector to be a flood. When the Thames makes a sudden rise, it is considered to be a flood.

22,045. Can you measure that flood by the quantity of water that was going over Teddington Weir, for instance?—It was not a very large amount; this was the first flood, but I had it taken because I wanted to see, after the drought, what was the effect of the washing out of the impurities from the soil, so that we should get, as it were, these impurities, if there were any, in a concentrated form. If this were so we should expect to have a very bad water.

22,046. (*Mr. H. W. Cripps.*) Would not that be affected very much by what the weather had been for a considerable time before? For instance, in 1898, we had a great number of quite droughty months?—Yes, we had.

22,047. Then there came suddenly in October what you call a flood, which is a very great increase of rain?—Yes.

22,048. Would not that depend very much on how long the droughty time had lasted before it?—The impurity?

22,049. Yes?—It has been stated that the impurity collects in the soil and that the first flood or the first portion of flood washes that out and I wished to ascertain—

22,050. That would be greater in proportion to the time there had been no rain previously?—One would think so, but these tables show that nothing of the kind happens.

22,051. (*Major-General Scott.*) I have a note here—I do not know whether it accords with your own recollection—that the highest flow in October was 74½ million gallons a day?—Yes.

22,052. That is really below the average?—That is below.

22,053. In fact it is below what Lord Balfour's Commission considered to be the lowest average flow of three dry years, is it not?—That I cannot say.

22,054. I think so. I have also a note that the Chelsea Company did not close their intakes once during that month?—No. Of course it was a very great increase on the quantity of water which had been coming down immediately before; and any great and sudden increase is considered a flood quite independently of the quantity of water flowing over Teddington Weir.

(*Mr. Pember.*) If there are impurities to bring off, of course you must bring them. If there are impurities accumulated in the soil, they must be washed out. That is what has been stated. It appears from this experimental evidence that it is not the case.

22,055. (*Chairman.*) The result of your examinations for October, 1898, comes out at .110?—That is not half as much again as the average state of purity of the river.

22,056. Which average state of purity?—Taking 1898 as .085, about .08 is about the average state of purity of the river.

22,057. (*Mr. Pember.*) It is as 11 is to 8?—Yes, as 11 to 8. You will see, at the bottom of Table 3, .083 refers to the amount of organic impurity.

22,058. (*Chairman.*) In 1897?—In 1897.

22,059. .091 represents the amount of organic impurity in 1898?—1898 is quite an exceptional year.

22,060. But we are dealing altogether with 1898, and the impurity up to October 1898 is .091?—Yes, if you like to take 1898.

22,061. Then this flood of October 1898 raises this impurity to .110?—Yes, that is from .091 to .110—a comparatively slight increase.

22,062. Yes?—Then, if you turn to Table 5, you get the second flood which occurred, which was from November 24th to November 29th. There you see that the highest amount is represented by .32, and the lowest by .25.

22,063. How many samples did you take on each of these days?—One sample on each day.

22,064. Only one?—This sample was a mixture of three samples taken at separate portions of the river.

22,065. I see the first day of the flood is better than the third?—Yes, that is so.

22,066. And the fourth, fifth, and sixth are exactly the same as the second?—That is so.

22,067. That is when the water is first received?—That is so.

22,068. After settling for nine days, there is a difference in the amount of impurity—I mean they do not follow the same order?—No, they do not follow the same order. Your Lordship will notice that the ones with the largest amount of impurity now contain the smallest. These were turbid when they were taken, these two as far as I recollect being more turbid than the others. As the turbid matter settles, it carries down with it the organic impurity. Therefore, we have, in this case, on the first day of the flood, .10 organic impurity left in the water, and on the third day only .12.

22,069. So that the water taken on the first day of the flood turns out better than the water taken upon the subsequent days?—It does so.

22,070. After having settled for nine days?—After having settled for nine days.

22,071. (*Mr. De Bock Porter.*) Is that the only experiment of that kind you have made, or is that a general result?—No, I have some other experiments

to follow, which you will see, directly, in another table.

22,072. (*Chairman.*) We have not yet finished Table 5. There is a second division of Table 5?—That is flood No. 3, samples of which begin on December 6.

22,073. Those are also first day, second day, and so on, are they not?—Yes, down to the sixth.

22,074. It is not so stated?—No, it was inadvertently omitted.

22,075. (*Major-General Scott.*) Was that a smaller flood in December?—I do not know the actual amounts which were passing over the weir. The samples were clearer than those taken in the previous flood.

22,076. (*Chairman.*) Then there sets in an improvement, so to speak, in the water on the fifth day?—You will notice that on the sixth day the water is considerably better than the average Thames water.

22,077. (*Mr. Pember.*) The average of the top part of Table 5, my Lord, you might like to know, perhaps, is .27. I think that is right, is it not, Mr. Groves?—That is right.

22,078. And the average of the others is .093?—Yes.

22,079. (*Chairman.*) What is the .093?—It has just been calculated out. The average of the first six samples is 0.27.

22,080. The average of the six samples of the flood of November 1898, is what?—Is 0.27.

22,081. That is a good deal better than any of the averages of the water of the river when it was not in flood?—No.

(*Mr. Pember.*) Not so good as Table 4, my Lord; Table 4 is 0.110; this is 0.27.

(*Mr. Balfour Browne.*) That is in flood.

22,082. (*Chairman.*) It is flood water, but compare it with the averages of Tables 1, 2, and 3 which are waters not in flood, it is considerably better?—No, this is 0.27; the other is 0.093—it contains about three times as much organic matter.

22,083. What is the average of the flood of December, 1898?—I make it .093.

(*Mr. Pember.*) Recurring?—Yes, 3 recurring.

22,084. (*Chairman.*) This time I am right—it is better than the average of the samples taken when the river is not in flood?—It is a little worse.

22,085. A little better?—A little worse if you take 1898. Of course, if you put in the May sample, it is better, but I say 1898 is an exceptional year altogether.

22,086. No, if you take Table 3, Table 3 gives .091?—And this gives .093.

22,087. A trifle more?—Just a trifle more.

22,088. On the other hand, the average of the samples taken when the river was not in flood in 1897 gives .094?—Yes.

22,089. (*Mr. H. W. Cripps.*) Between November 1897 and December 1898, a great deal has been done by your Conservancy Board for purifying the Thames and stopping the pollution?—Yes, the powers of the Act are given—

22,090. You cannot compare one of those with the other in the amount of turbidity, and attribute it only to a flood, because in the meantime there has been a great deal of purification?—Between 1897 and 1898?

22,091. Yes, the whole year?—It is not a very large amount.

22,092. Is it not going on everywhere at the present time—are not your officers stopping the pollution?—It is everywhere going on.

(*Mr. Balfour Browne.*) The purification is shown upon this witness's Table 7.

(*Witness.*) Yes, which we shall come to presently.

22,093. (*Chairman.*) Your Table 3, which is for the year 1898, when the river is not in flood, is, so to speak, arranged—you have left out May?—I have left out May.

22,094. Supposing you put in May, what would the average be of the months from January to October, 1898?—I make it .103.

22,095. Let me draw the inference from that—the average of the river when not in flood from January to October 1898, is worse than the average of the December flood?—That is so.

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Groves,
F.R.S.

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22,096. What is the next table?—Table 6.
(*The Witness handed in Table 6. See Appendix O, 6.*)
22,097. Table 6?—Yes, it is really an Appendix to Table 5.

22,098. What does the Table show?—That represents a very large flood which occurred the latter end of last year and the commencement of this.

22,099. This is a flood of December 1898 and January 1899?—Yes.

22,100. There, I see, you have no analyses of the water when received in December, 1898?—They were not received till about seven days after they had been taken, and, therefore, I let them stay nine days. They would have told us nothing, because they had partially settled.

22,101. What size were the samples to begin with?—Half-a-gallon.

22,102. Did you let the half-gallon settle by itself?—Yes, we let it stand for nine days.

22,103. Would not the rate of settlement be very different in a half-gallon standing on a table and in the river itself, or a quantity of water in a reservoir?—Of course, it could not be compared with water in a reservoir. I should think it would settle more rapidly in a reservoir than it would in a bottle.

22,104. More rapidly?—Yes, because there are not the changes of temperature; changes of temperature tend to stir up the water.

22,105. Then these gallons settling give the decimals which you have put in your Table 6?—Yes. You will see there that practically when the flood was subsiding that the water was considerably better than the average water of the river. That one can understand, because it has been diluted with pure rain water, which contains no organic impurity or comparatively little organic impurity.

(*Mr. Pember.*) The last four days, my Lord, I have just done, and the average of the four works out at '10—the same as '100, of course; and when the flood subsides, the last four days work out at 0'90.

(*Mr. Balfour Browne.*) They cannot work out at '10.

(*Mr. Pember.*) 0'100.

(*Mr. Balfour Browne.*) No, with great respect, because there are 2's in it.

(*Mr. Pember.*) I beg your pardon—'20.

(*Witness.*) It is '15.

(*Mr. Pember.*) Is it?

22,106. (*Chairman.*) Yes, '15. What is the average of the whole column of flood water after settling nine days—you have not got it, perhaps?—It comes out 0'10.

22,107. In this organic impurity, of which you have given us the quantities, both when the river is not in flood and when the river is in flood, what is the dangerous element?—It is somewhat difficult to answer, I do not think that there is any dangerous element.

22,108. Are the nitrites dangerous?—No.

22,109. Then there is no danger?—The nitrites show that the entire decomposition of the impure animal matter which is present is going on satisfactorily. It is a sign that the impurity is being burnt up—I may use that expression, perhaps.

22,110. Does no part of this fractional impurity, of which you have given us the amount, make the water dangerous to drink?—Not the chemical portion. It is better perhaps to keep the chemical subject separate from the bacteriological.

22,111. As I understand, your investigations have not tended to discover bacteria but sewage in the water?—That is so; I have something to say on that matter afterwards.

22,112. Then the tables do not show us in the least about the bacteria?—These tables do not show anything about bacteria.

22,113. You say this organic impurity, of which you have given us the details, is not prejudicial to the water as a potable liquid?—It is not, in the small quantities which are there.

22,114. Does it affect the colour of the water?—The vegetable matter—the peaty matter which comes down—affects the colour of the water.

22,115. Is the peaty matter all included in what you call the organic matter?—Yes, the nitrogenous peaty matter is all included—that is the portion which is capable of undergoing putrefaction.

22,116. I see you have given a common description to this organic matter; what is it?—It is albumenoid matters—matters which will, comparatively, easily decompose and putrify—putrescible matters, one may call them.

22,117. Will you interpret the heading of your columns—there is "Alb. H.N₃."?—That is what is called albumenoid ammonia. There is a special process by which it is determined, which differs from that which is employed by Professors Crookes and Dewar. My object is to ascertain the amount of pollution in the water; their object is to ascertain how far that water is fit to drink. The objects are not the same.

22,118. (*Major-General Scott.*) What is your definition of "pollution"?—Pollution is sewage matter, including, of course, washings from fields, manure, and all that sort of thing—that is what I call pollution.

22,119. Do you not consider vegetable matter to be "pollution"?—Not the very small quantities which come in peaty matters.

22,120. In autumn there is a decay of leaves going on, and that happens to bring organic matter into the water?—Yes, in small quantities.

22,121. Would you call that pollution?—I should call that pollution, but then it is so infinitesimally small, as compared with the amount of animal matter. It is, of course, organic matter which goes in, but that is organic matter of a vegetable nature, not putrescent matter.

22,122. (*Mr. H. W. Cripps.*) Where do you get your principal pollution, as you would call it, from? Is it from the sewers of the towns or villages?—No, from the effluents from the sewage farms.

22,123. Or from the drain sewage, if there are no sewage farms?—From drains, where there are no sewage farms; those cases are comparatively few.

22,124. Do you mean from that, that if you could stop all sewage from coming into the river at all, you would have great purity?—You would purify it—it would be purer, undoubtedly; but you cannot stop what drains off from the fields.

22,125. It would materially affect what you call your pollution?—I cannot say to what extent, but it would materially affect it—distinctly.

22,126. (*Chairman.*) May I take it that the figures in your tables represent only pollution from animal matter, and not pollution from vegetable matter?—The pollution from vegetable matter there is so small that you may neglect it. It is mainly directed to the pollution by sewage. That is the object for which the Thames Conservancy examines the river.

22,127. (*Major-General Scott.*) In Dr. Frankland's report he lays stress upon the fact very frequently that the pollution that is found to exist in the water is mainly vegetable?—That is the water after filtration. The method of examination is different.

22,128. Yours is water before filtration?—Yes. It seems that these examinations show us that the flood water might be quite safely taken from the very first hour of the flood.

22,129. (*Chairman.*) Then you see no advantage in letting the flood go by for any particular number of days?—No advantage, as regards the purity of the water.

22,130. (*Major-General Scott.*) Do you recognise as of any weight what has been called the sentimental objection to the water?—No, I do not.

22,131. That phrase was used a good deal in the evidence before Lord Balfour's Commission?—It has been used. I look upon the matter from a purely utilitarian point of view, because, if you go to sentimentality, every water, wherever you get it, must probably be derived in part from decayed corpses or something of that kind. When any animal body decays, the water may pass off into the atmosphere, and it comes down as rain again; or when it decays the water may run into the river, it is the same thing. The sentimental objection, in my mind, has no weight.

22,132. Do you recognise colour as a valid objection?—One is used in London to drinking water that is so clear that when one goes to a place which is supplied with lake water, one looks upon the lake water with suspicion, because many of the lake waters are very distinctly coloured.

22,133. (*Chairman.*) Which lake waters are you speaking of?—Glasgow, for instance; there the water is distinctly coloured.

22,134. Has the Thirlmere water any colour?—I do not know, and therefore I should not like to say; I have been told that it has.

(*Mr. H. W. Cripps.*) It has a little peaty colour.

(*Witness.*) I have been told that it has, and I should think so from the situation of Thirlmere.

22,135. (*Chairman.*) The result of your evidence, so far, is that the water companies might be allowed to take flood waters with perfect safety?—Yes. If these were placed in a large storage reservoir, the suspended matter would sink to the bottom, and it would carry with it a very large quantity indeed of the organic matter. Of course, one has no actual experience, but I think it would be found that flood waters will give, after subsidence, better water than the water taken from the Thames when it is not in flood.

22,136. (*Major-General Scott.*) Would you apply that to water taken during the best part of the year from the Thames—when it is nearly spring water?—I should think it would be so, because spring water contains small quantities of organic matter, and rain water contains practically none. Flood waters are originally, of course, all rain water. You will see, if you refer to my Table 6, that at the end of the flood we have .07. I think it is only once or twice that I have had the river water below .07 in all the examinations I have made.

22,137. (*Chairman.*) Yes, but that is on the eighth day of the flood?—Yes.

22,138. That would seem, so far, a slight argument in favour of letting seven days go by?—You will find that on the third day it is almost as good.

22,139. I see that on the third day it is .08?—Yes. A flood is not water put into the top of the river which then runs down it. It may come in, first of all, from one district, where there is a tributary running in; then it comes in from another; then it comes in from the upper part of the river; so that you have the quality of the water varying almost hourly during a flood.

22,140. Your practical conclusion is that the flood waters may be safely taken at once?—Yes, they may be safely taken at any time.

22,141. (*Major-General Scott.*) Have you directed your attention to the question of taking flood waters directly on to the filters?—That is an engineering point. I have no practical experience, but it seems to me that an engineer would not willingly choke up his filter.

22,142. I think you may take it that engineers, as a rule, detest flood water?—Possibly.

22,143. It gives them the greatest possible trouble? If they run it directly on to the filters.

22,144. They have, as of course you are aware, to get a certain amount through the filters?—Yes. Still, from the reports which have been made, if there is good filtration, even when turbid water is taken on, there is no turbidity in the water which is supplied. If these flood waters were to remain for a short time in these large reservoirs, and the water were taken off, as it would be, probably, from the upper surface, those waters would not interfere with the filtration; I should think that would be found to be the case. It is a purely engineering point, and, therefore, of course, I can express no opinion on it.

22,145. I did not quite catch that answer?—If the flood water were allowed to settle for a few days in the reservoir, and the water was then taken from the upper surface, the filters would not be affected; but that, of course, is an engineering matter, and I only offer just a common sense opinion.

22,146. You have not gone into that?—I have not gone into it. Might I make one more observation; and that is with regard to the effect of filtration through sand on the chemical purity of the water?

22,147. (*Chairman.*) Yes?—I have had some analyses made of the water in my own place, which is Southwark

and Vauxhall water—not one of the best by any means—and I find that it comes out .03.

22,148. That is the organic impurity?—Organic impurity of the same character as in the original river-water.

22,149. That is water delivered by the Southwark and Vauxhall Company at your residence?—Yes. It comes out .03 taken by exactly this same method of examination.

22,150. That diminution is due, I suppose, to the settlement in the reservoirs, and to the filtration?—Yes. Of course, the impurity originally present may be partly due to organic matter which is dissolved in the water, and partly due to organic matter which is present there as bacteria. These flood waters, of course, have all the bacteria in them, but the water which is supplied has the bacteria taken out. The total impurity is diminished down to practically a third by filtration.

22,151. Now will you put in your next table, which shows the improvement that the Thames Conservancy has wrought in the river, I believe?—Yes. I do not know that it bears very much upon the actual inquiry, but you will see, if you will look at some of these towns, the very great improvement that has occurred. Take the first division of the table—the oxygen is only a sort of corroboration—but take the albumenoid ammonia.

(*The Witness handed in Table 7. See Appendix O, 7.*)

22,152. This gives us the amount of albumenoid ammonia?—From the effluents from these sewage farms.

22,153. Do you mean these samples are taken directly from the effluent?—They are taken directly from the effluent of the sewage farm as it flows into the nearest stream, which ultimately gets down to the Thames.

22,154. I do not see Staines among these places?—No, I have not got Staines. Staines is comparatively recent, and therefore I cannot compare it with what it was before the Thames Conservancy Act of 1894. This is mainly for showing what it was before the Act of 1894.

22,155. Will you please give us the results of the table?—The results of the table are that, in a very large number of cases, the effluent has been enormously purified, and, by gentle pressure, I think there is no doubt that we can get it still further purified, and get a still better effluent. These matters take a very large amount of time to work properly, and there are very great difficulties in the way; the Thames Conservancy do not want to raise up any very great feeling of dislike towards their Board, and, therefore, they proceed gently with these people—indeed, it is necessary in order to get the work done at all. Then it takes some two or three years, perhaps, to get the sewage works in thorough working order; but you see the effect which has been produced at many of these farms. For instance, take Maidenhead: from 4.25 it has been reduced to 1.5.

22,156. (*Mr. De Bock Porter.*) Is this on an average, or on any particular day?—These are the averages of a large number of samples which have been taken during the year.

22,157. (*Mr. H. W. Cripps.*) Have you any particular reason for picking out these particular towns?—Simply because they were large towns, which were examined carefully before the 1894 Act; all the other towns we have, of course, examined since the 1894 Act. You will see that some of these remain about the same. Reading, for instance, remains about the same, although this year it happens—due to the drought, no doubt—to be a little worse. Oxford is considerably worse than it was in 1893, and much worse than it was last year.

22,158. (*Mr. De Bock Porter.*) But some of these have increased from 1893 to 1898; take Cirencester, for instance?—Yes; but in both cases there the amount of pollution is exceedingly small.

22,159. At the time of flood, does not a large amount of sewage find its way into the river without treatment at all?—Not if the sewage farm is properly conducted.

22,160. But many of them cannot deal properly with storm water, can they?—If there is actual storm water, of course it washes out the sewers, and that goes into the river.

22,161. And that goes straight into the river?—It goes in some cases straight into the stream.

22,162. Without any treatment?—Yes.

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Mr. C. E. Groves, F.R.S. (Mr. Pember.) If you take the first four that he has got there—Maidenhead and Wokingham (Old, New, and Union)—in 1887-92, they work out at an average of 5·437 of impurity per million; but if you take the same four places for 1898, they work out at 1·32.

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22,163. (Mr. H. W. Cripps.) Do you know, as to those particular places which Mr. Pember has just alluded to, that a great deal has been done towards stopping the sewage from those places in the interval?—Yes; in all those four cases that are mentioned there, a great deal has been done.

22,164. So that you know what to attribute the difference to?—I do, decidedly.

(Mr. Pember.) Quite so; but it has reduced it from nearly 5½ per million down to 1½.

(Mr. H. W. Cripps.) There is no doubt the same thing might be carried on all through the Thames Valley, with some difference in degree. Those who live in the Thames Valley know that has been going on rapidly now since the New Thames Conservancy has been established.

(Mr. Pember.) Quite so, and that is what we want established.

(Witness.) There is another point with regard to the New Thames Conservancy Act, namely, that we are now able to deal with considerable sized towns which were formerly outside our jurisdiction. Moreover, in the old Act, we had to prove that the Thames itself was polluted; at the present time we only have to prove that the polluting matter goes into a stream which communicates with the Thames; we have nothing to do with whether it gets there or not.

22,165. The old Thames Conservancy was confined to a very short distance on either side of the Thames?—Ten miles on either side.

22,166. And did not extend to the effluents at all, unless they were within that distance?—And even then you could not prove it. They said, Oh, yes, there is sewage going in, but the sewage does not get down to the river. If you found the sewage did get down to the river, they said, No, it is the town up above this is sending in the sewage, you cannot prove it is ours, and the magistrates would not convict.

22,167. (Chairman.) You have power to deal with all effluents at whatever distance now?—Yes.

22,168. (Mr. H. W. Cripps.) That affects all towns, whatever the distance, such as Aylesbury on the one side, and Newbury on the other?—Yes.

22,169. They are all within the jurisdiction?—Yes. In some cases they have done very well, and in other cases one is gradually getting them to do very well.

22,170. (Chairman.) Do you doubt that there will be further improvement?—There will be further improvement, undoubtedly.

22,171. (Mr. De Bock Porter.) Can you account for the extraordinary difference in Wokingham Union between 7·0 in 1895 and 0·5 in 1898?—No, I cannot, except that in this Union they have entirely altered their system of treatment.

22,172. (Chairman.) Do they pass it over land now?—I have taken Wokingham because it has been one of the most troublesome places we have had to deal with.

22,173. (Sir John Dorington.) What is meant by Wokingham Union? Does that mean the workhouse or sewerage district?—I do not know. There are three sewage farms there, and we take the effluent of each of the three sewage farms.

22,174. One is called the Union; where is that?—I do not know where the sewage comes from.

(Mr. Pember.) Probably it includes several parishes.

22,175. (Chairman.) You have actually made Wokingham now the best of all?—No, it is not the best.

22,176. I cannot see any better in 1898?—Look at Abingdon. Abingdon has always been good. Sometimes the water comes off that sewage farm in such a condition that if it were simply sand-filtered it would be fit to drink.

22,177. (Major-General Scott.) Are those places visited without previous notice?—Yes.

22,178. How often, on the average, in a year?—I have a sample taken once a month from every one of those places, sometimes oftener. Sometimes, if things

look bad, we get them taken once a week, or once a fortnight. We come down upon them sometimes in the daytime, sometimes in the night; they never know when the samples are going to be taken.

22,179. (Chairman.) Are these sewerage effluents, in your view, the most dangerous sources of pollution for the Thames?—I do not think they are dangerous at all if the sewage farms are properly conducted.

22,180. Not if they are properly conducted; but I mean is the chance of pollution from sewage worse than the chance of pollution from manure on fields?—When we come to the manure from fields, we are coming to the bacterial question—because that is what it amounts to.

22,181. I do not ask you about bacteria, because, I understand, you have not investigated that; what do you regard as the chief sources of danger, from your point of view, of the Thames?—Pathogenic bacteria, if there are any at all.

22,182. Where do they come from—from the sewage, from manure, or from what?—There are bacteria which come from fresh sewage, but if the sewage has been treated and passed over land, if you treat the sewage by precipitation, or by almost any of the means which have been proposed, and you subsequently pass it over land by irrigation, there has been no evidence to show that any pathogenic organism comes out with the effluent.

22,183. (Mr. H. W. Cripps.) Do you mean supposing it passes over manured land?—The organisms which come from animals are not pathogenic, that is to say, they do not produce the ordinary diseases of man.

22,184. (Mr. Pember.) They are not morbid?—They are not morbid. Perhaps I might be allowed to say a few words about that. I am not a bacteriological expert, but I have taken a great deal of interest in the matter necessarily, being connected with it, and also, because one of my most intimate friends and colleagues, Dr. Washbourn of Guy's Hospital, is a bacteriologist, who was engaged in the Maidstone case. Therefore, I should like to say a few words about bacteria.

22,185. (Chairman.) Very well?—First of all, there are two kinds of bacteria. We may class them as bacteria which will produce disease, and bacteria which will not produce disease; the bacteria which will not produce disease are useful. It is through their agency that what we call chemical pollution is destroyed. Moreover, in some instances we know that bacteria of that kind destroy pathogenic organisms. If I might be allowed to give you an instance, there is something in the blood which very closely resembles bacteria, which are called leucocytes. There are always organisms about in the air, and if you have a pathogenic one which gets into the blood a leucocyte seizes upon that, and gradually destroys it and absorbs it. I have myself, under the microscope, seen the actual process of destruction going on. If it were not for that, we should all die. If you have got a single typhoid germ into your blood, if that were not destroyed, it would propagate, and you would die of typhoid. If you have got a single pathogenic germ, that would propagate if it were not destroyed. Of course, we know comparatively little of bacteriology, but it seems that any pathogenic organisms, coli, typhoid bacilli, and various others, which come in contact with the enormous number of the bacteria which destroy this albumenoid organic matter in manure, are killed and destroyed—at all events they disappear. These good bacteria, if we may so express it, propagate where there is light and air; most of the pathogenic organisms, the ones which are most dangerous, will, when exposed to light, become torpid and are very easily killed.

22,186. That happens, of course, to the storage of all water?—That happens in the storage of water, the bacteria are carried down and disappear. The same thing happens when they are exposed to light, and indicates how they become destroyed in passing over sewage farms. That is the particular point which I wish to impress upon your Lordship—the necessity for using irrigation.

22,187. And you see no connexion between the number of pathogenic bacteria and floods?—As a matter of fact, I believe that in Thames water, flood or otherwise, such pathogenic organisms as the typhoid bacillus have never been detected.

22,188. Have you any view about the amount of flow that it would be desirable to have over Teddington Weir—does that come within your department?—No.

If I might make a suggestion, I think that that might very well be left to the Thames Conservancy. They are the body appointed to look after the river. It is their business to look after the river, and it would be for them to decide.

22,189. Have they an engineer?—Yes, they have an engineer. Might I just hand in for your information a comparison between the amount of deaths from typhoid in various large towns, including London, which is mainly supplied by water from the Thames. I simply want to put it in, in order to illustrate that the Thames affords one of the best waters for drinking we have.

(The witness handed in Table 8. See Appendix O, 8.)

22,190. (Mr. H. W. Cripps.) Might I sum up the effect of your evidence in this way, that whatever the pollution of the Thames may have been at the time when Lord Balfour's Commission inquired into the question, it is improved at the present time?—Very greatly improved.

22,191. (Chairman.) Yes, and another material result of your evidence, as I understand it, is that the information you have acquired since the Balfour Commission convinces you that floods are not dangerous to take?—That is so.

Cross-examined by Mr. BALFOUR BROWNE.

22,192. First of all, with regard to your tables—I will come back to one or two questions about bacteriology afterwards—I am not quite sure that I think them quite satisfactory; 1 and 2 are a comparison, I understand, to show the improvement in the river between an earlier year, 1893, and 1897?—Yes.

22,193. When making that comparison you have taken upon yourself to leave out May, which is a higher figure than the average of the year 1893?—No, I have not left out May.

22,194. Yes, indeed?—No.

22,195. You have put it in the table, but not in the result?—I have taken it in the average also.

22,196. You leave it out?—No, not in the average.

22,197. In the last figure you leave it out?—Yes, in the last.

22,198. The '083?—That is not in the table.

22,199. Take the average of your 24 samples higher up from January 1893 to January 1894, that is '117?—Yes.

22,200. And the May of 1898 is worse than that?—Yes.

22,201. Are these the whole of the samples taken?—Yes, the whole.

22,202. Now the same thing takes place in the next Tables 3 and 4, in 1898 you say it was a little worse than in 1897, because it was '091 as against '083?—Yes.

22,203. Again, the flood waters in 4 in 1898—?—4 is the first flood.

22,204. That shows on the average of your 10 samples that the average of the first flood was worse than the waters in Table 3?—Yes.

22,205. Because in Table 3 it is '091, and the first of the flood is '110?—That is so.

22,206. Now, with regard to the flood waters in 5, I see that there is not a gradual improvement in the water—it sometimes goes back after the first of the flood?—I have explained that.

22,207. I daresay; I want only to emphasise it. On the first day of your flood in November, according to the albumenoid ammonia test, it was '3, and on the third day it went up to '32?—Yes.

22,208. Why is the oxygen test on that flood for six days exactly the same all through—'18?—The oxygen test combines two things—the organic matter which is present and the nitrites; therefore, the oxygen test is not a fair test of the purity of the water.

22,209. It is not?—No.

22,210. The albumenoid ammonia is a more careful and a better test?—Decidedly.

22,211. Are there not other things besides sewage which require oxygen?—Precisely.

22,212. And that, therefore, may vitiate your results?—Precisely.

22,213. Your results on the oxygen tests are vitiated in that flood, because, although the albumenoid ammonia varied, it remained, according to the oxygen test, '18 all the way through?—That is so.

22,214. Now, take the next flood, December; there I find again that, according to the oxygen test, it goes up on the third day?—Precisely; there were no nitrites present.

22,215. All these tests, either for albumenoid ammonia, oxygen, or nitrates and nitrites, are only tests for dead matter—matter that is being burnt up—is that not so?—No, all the bacteria come in the results.

22,216. Live bacteria?—Yes, they are all treated in the same way; we do not separate them.

22,217. Then in the process you must kill them?—Yes, they are killed.

22,218. Are you aware that you cannot kill by any of your processes a pathogenic germ?—Certainly you can.

22,219. You are certain you can?—Yes.

22,220. Have you seen Dr. Klein's Report upon London water?—I have seen it, that is all. I have not read it.

22,221. Are you aware that large numbers, enormous numbers, of microbes, both aerobic, anaerobic, and pathogenic, are supplied to the consumers of London water?—I am not.

22,222. Have you made yourself any test to see the numbers?—I have seen tests made.

22,223. But these tests for albumenoid ammonia do not show living organisms, but are tests for dead ones?—No, they test living organisms. The whole of the nitrogenous organic matter which is of such a nature as is capable of being decomposed is given by these tables.

22,224. But it is decomposing?—All that is capable of being decomposed, living or not.

22,225. Do you mean to say that you can tell the presence of a living fish from any of your experiments?—No. You cannot put the fish in, because all this water is filtered through paper.

22,226. True, but it only tells, does it not, what matter is in a state of decomposition?—No, it tells all the matter which is present. I have said that four times.

22,227. Take nitrates and nitrites; I see that is Dr. Frankland's process of experiment; does he not invariably use it as equivalent to previous sewage contamination?—Showing what has already been decomposed, and which is not shown under the albumenoid ammonia test at all.

22,228. What is albumenoid ammonia?—Albumenoid ammonia is the term for the number which is obtained when a water or any other substance containing putrescible matter is treated by a certain process.

22,229. Putrescible matter?—Yes.

22,230. But not putrescing matter?—Not necessarily putrescing—both putrescing and putrescible.

22,231. With regard to the next of your tables, which deals with another flood, I think—?—Yes.

22,232. There again, I thought, according to both tests, that the first of the flood is not always the best, because on the third day, according to your albumenoid test, it was '08, and the fourth, fifth and sixth days it was '11?—Yes, and on the seventh and eighth days it was '07.

22,233. I see that, and also, according to the oxygen test, the second and third days were the best?—Yes.

22,234. The third, fourth and fifth were worse than the third?—Yes.

22,235. You have spoken of the effect of light on these micro-organisms; are they not much more likely to be effected in the clear water of summer than in the flood waters in winter?—I cannot say; there is no evidence on the point.

22,236. Have you seen Dr. Sims Woodhead's experiments on that?—Yes, I have.

22,237. Does he not show that they are exceedingly sensitive to light?—Yes.

Mr. C. B. Groves, F.R.S.

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Mr. C. E. Groves, F.R.S. 22,238. If you have large amounts of solid matter floating down in the water, would not that prevent light getting at these micro-organisms?—Certainly.

33 Jan. '99 22,239. You have not, in any of these experiments, tested for mineral matter or solids in suspension at all?—Dissolved, do you mean?

22,240. Solids in suspension?—Actual solid matter in suspension.

22,241. Yes?—I have taken the two worst flood waters.

22,242. That is not shown here?—No.

22,243. There is no solid in suspension here?—There is in the first column of figures, the second is after they had settled.

22,244. After they had settled, and therefore the water might be muddy from various mineral matters in it?—Yes.

22,245. And dark-coloured?—Yes.

22,246. And so might protect your micro-organisms?—Possibly.

22,247. Have you got those results here—you say you had them?—Ascertaining the exact amount?

22,248. Yes?—The two worst I could find were on the 29th and 30th December.

22,249. (*Chairman.*) Which year?—1898. It is shown in 'table 6.

22,250. (*Mr. Balfour Browne.*) Have you got your total analyses there?—No, I have not got the total analyses. It is the amount of suspended matter you are asking for?

22,251. Yes?—That was 2·4 grains per gallon. Those were the two worst samples I could find.

Mr. H. W. Cripps. Do you think it is material, *Mr. Balfour Browne*, to go into those minute points; really, is it worth while taking up time with them?

(*Mr. Balfour Browne.*) I do not think so, sir; but, of course, if this evidence is material to the Commission, it is material to cross-examine upon it.

(*Mr. H. W. Cripps.*) When we call a witness like this gentleman, and get general evidence from him, it is quite natural that he goes into it *con amore* altogether; but if we let Counsel on both sides do the same, I do not see any end to it all.

(*Mr. Balfour Browne.*) You see, sir, the position of things is a little different; we were not allowed, quite properly, to go behind Lord Balfour's Commission, or to suggest anything that was not to be found in that volume.

(*Chairman.*) No, no.

(*Mr. H. W. Cripps.*) I do not think that was so.

(*Mr. Balfour Browne.*) I think so.

(*Mr. H. W. Cripps.*) Personally, I objected, I must say, to going into the findings Lord Balfour's Commission in any way whatever.

(*Mr. Balfour Browne.*) Yes, I quite agree.

The witness withdrew.

(*Mr. H. W. Cripps.*) But when that was allowed to be done on one side, of course, you would expect a reply in the same way on the other; but whether it is necessary to go into this matter extremely minutely I do not know. Time is worth something.

(*Mr. Balfour Browne.*) May I say what is the position they are taking up now? They are departing from the recommendation there, that for 15 days, flood water should not be taken.

(*Chairman.*) There was no such recommendation.

(*Mr. Balfour Browne.*) I think that is the basis of the matter—at any rate, that is the proposition, that now they should take flood water.

(*Chairman.*) Yes.

(*Mr. Balfour Browne.*) We absolutely object to flood water being taken. I only want to put on record the fact that we do not assent to these propositions that are being put forward; and when any scheme comes before anybody who can sanction such a scheme, we will oppose it.

(*Mr. H. W. Cripps.*) I do not take it that you assent to anything.

22,252. (*Mr. Balfour Browne.*) I do not want to take up time in cross-examination; I want, if I can, to bring this inquiry to an end as soon as possible. There is just one question. (*To the witness.*) Can you tell me this, for another purpose: the 2·4 grains per gallon, I take it, 70,000 parts —?—Yes.

22,253. That is solid matter?—That is solid matter. I see what the object of your question is—it is matter which if brought into a reservoir would settle at the bottom.

22,254. In the matter that is at the bottom of the reservoir, sludge we may call it, would you tell me what percentage of water there is?—I do not know.

22,255. You have not tested it at all?—No.

22,256. Would there be about 90 per cent. of water?—I should think so, probably, but I do not know, and I cannot say.

(*Chairman.*) 90 per cent. of water in what?

(*Mr. Balfour Browne.*) In the sludge or settlement at the bottom of a reservoir.

(*Mr. Pope.*) That must be a purely arbitrary figure.

(*Witness.*) Of course, it is purely arbitrary.

(*Mr. Pope.*) It depends upon what you take as sludge.

22,257. (*Chairman.*) You say 2·4 grains is the largest quantity you can find?—That is the largest quantity.

22,258. What is your average quantity in flood water?—I have never taken it before; but as the question was raised, I thought I would see what the worst was. These samples were very thick at the bottom.

22,259. (*Mr. Pember.*) Sir William Crookes and Professor Dewar said about a grain and a half on an average?—A grain and a half was the quantity Dr. Tidy found.

Mr. H. C. B. Bowles.

Mr. HENRY CARINGTON BOWLES BOWLES called and examined.

22,260. (*Chairman.*) You are, I believe, governor of the New River Company?—Yes.

22,261. When did you join the board of that company?—In 1852.

22,262. What is the difference between being on the board and being a governor?—There are so many directors on the company, and then they have a chairman who is called the governor.

22,263. You have been governor since the year 1836, I believe?—Yes.

22,264. Do you live in the district?—I live down at Enfield, which is midway between Hertford and London.

22,265. I do not know that we need go into the history of the New River Company; it dates back a long way, as we know, from the time of James the First?—For nearly 300 years it has supplied London with water.

22,266. We also know that Queen Elizabeth enabled the Corporation of London to supply London with

water, and they transferred their powers to Sir Hugh Myddelton?—They would not have anything to do with it, and therefore Sir Hugh Myddelton undertook it.

22,267. And the charter which incorporated Sir Hugh Myddelton and his colleagues was dated 21st June 1619?—Yes.

22,268. At that time there was no share capital, I believe?—There was no capital authorised. It must have been the same as the cost book principle—they put down so much money, I fancy, as it was wanted.

22,269. That charter prohibited anybody else from bringing water to London or Westminster without the consent of the New River Company?—Yes, that was so.

22,270. Although there was no share capital, in the ordinary sense, were the proprietors owners of real estate?—Yes, the whole company belonged to that portion of them which were called the adventurers' shares. It was divided at one time, and the King took half the shares—which are called King's shares at the

present day—and the others were adventurers' shares. After some time, when it did not pay, the King gave up all his right in the company, and returned the shares to Sir Hugh Myddelton.

22,271. Gave them; did he not sell them?—He gave them back, but there was a clog on the company of 500*l.* a year for ever. They had to undertake to pay that for ever before the shares were given up.

22,272. Does that continue still?—Yes, that continues still.

22,273. To whom is that 500*l.* a year paid now?—To a private individual; I forget his name. The King sold it, I presume, afterwards. The 500*l.* a year, at any rate, is still paid.

22,274. Up to the year 1852 you charged your customers by agreement, I believe?—Yes, the way of charging them, I believe, was so much per room. That was the general way. Then Parliament brought in an Act, and they had to charge according to annual value.

22,275. "Parliament brought in an Act"—I suppose you brought in the Act?—No.

22,276. Was it a public Act? Do you mean—

(*Mr. Balfour Browne.*) There was first a public Act.

(*Mr. Pope.*) The general principle of rating was laid down in 1852 by a public Act, and then there were private Acts applying it to the circumstances of the New River and the other companies.

(*Mr. Balfour Browne.*) There were private Acts for all the companies.

(*Chairman.*) You do not happen to have a copy of that Act of 1852, do you?

(*Mr. Hollams.*) Yes. (*Handing a copy to the noble Chairman.*)

(*Chairman.*) This is a private Act. It is the public Act I wanted to see.

(*Mr. Hollams.*) A great deal of the public Act was repealed.

(*Witness.*) I think that our Act of Parliament proposed the room rate, and that was overruled by the Committee, and they made it that the charge should be according to annual value.

(*Mr. Hollams.*) This is the public Act of 1852. Some of the sections about constant supply were repealed by the Act of 1871. (*Handing another Act to the noble Chairman.*)

(*Chairman.*) There is nothing in this about charges according to rateable value.

(*Mr. Hollams.*) No, my Lord; that is in the Act of 1847.

(*Mr. Littler.*) That is in the Waterworks Clauses Act, 1847.

(*Chairman.*) Am I to take it that there was an express public Act, which took away the power to charge by agreement?

(*Mr. Pope.*) The Waterworks Clauses Act, 1847, made the principle of rating according to rateable value general throughout the country.

(*Witness.*) And then, if you will refer to our private Act of 1852, my recollection is that it was then made applicable to our own system.

(*Chairman.*) Where shall I find in the Act of 1847 a prohibition to charge by agreement?

(*Mr. Hollams.*) There is none. The Act of 1852 only related to the metropolitan companies, but the Act of 1852 incorporated the Act of 1847.

(*Mr. Balfour Browne.*) It is very fully stated in the evidence of Mr. H. L. Cripps upon the first day of the inquiry.

(*Mr. Hollams.*) I would refer your Lordship to section 35 of the Act of 1852.

22,277. (*Chairman to Witness.*) Your Act of 1852, I see, by section 35, compelled you to supply all owners and occupiers of houses, or parts of houses, within your district at a scale of charges that was based upon rateable value?—It was so.

22,278. "Annual value" is the term in the Act?—Yes.

22,279. I think we have got your scale of charges in detail, but it agrees, practically, with the West Middlesex, the Grand Junction, and the Chelsea charges?—Yes.

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22,280. That same Act of 1852 states your capital to be 1,519,958*l.*?—It is so. That was fixed after going into the question by the Act of Parliament, but, of course, necessarily, the company having been in existence so many years, it could hardly be thought that that represented the proper capital that had been spent upon the concern, because money was so much more valuable in those days than it is now.

22,281. Did that sum include the value of the lands that belonged to the New River Company?—It was all put in with the exception of some estates near London.

22,282. Then it does not include the value of all the lands?—Not the Clerkenwell Estate.

22,283. Does it include all your real property, except the Clerkenwell Estate?—Yes, all the property down the river, except the Clerkenwell Estate.

22,284. (*Mr. De Bock Porter.*) When was the Clerkenwell Estate taken out and made a separate account?—In 1871 there was an Act of Parliament.

22,285. At the time of the audit being imposed?—Yes, when the auditor was appointed, he was not to take cognisance of the Clerkenwell estate.

22,286. The value of it is taken into account in the purchase price of the shares—it is part of the investments?—The shares are sold on the market. I suppose they may buy it according to the dividend. The dividends are paid separately, and a purchaser would naturally see how much he was going to get per annum.

22,287. The price paid includes the dividend from water and the dividend from the Clerkenwell estate?—A proprietor would come into possession of the water estate and the landed estate as well.

22,288. He gets income from both sources?—Yes.

22,289. (*Chairman.*) These Adventurers' shares and King's shares are real estate, we have been told?—They are real estate, and every time one passes it is examined by the company's solicitors; just as much as any land which has passed through to see it is all right and proper before we pay the dividend to the individual who purchased it. It is transferred by deed, and has to be stamped in the usual way.

22,290. In the year 1866 there was a certain amount of share capital created, I believe?—Yes, that was new share capital amounting to half a million of money. That was to rank *pari passu* with the old shares, but was to be personal estate, and not freehold.

22,291. Do you mean that the holders of those shares got a portion of the profits of the real estate?—Yes, everything. The Act of Parliament says that they are to be paid *pari passu*; whatever dividend is paid, they are to have their share.

22,292. As I understand, originally the shares were 72 in number—namely, 36 Adventurers' shares and 36 King's shares?—That is so.

22,293. So the total value of those 72 shares represented in the million and a half, or the 1,519,958*l.*, that was fixed as the amount of capital in 1852?—That was so.

22,294. And then there comes the addition of half a million of ordinary shares which are personal estate?—In 1866.

22,295. And are ranked *pari passu* with the others?—With the others for the payment of dividend. It was in the year 1833 that the first dividend was paid, and it amounted to 11*l.* 19*s.* 1*d.*

22,296. I do not think we need go back to that?—I thought you would like to know that the dividend in 1834 falling so much less than the one in 1833, it was expected that there must be a call on the proprietors, but the next year being more successful, it was deferred, showing that they put everything into works, instead of dividing it at that time.

22,297. You have altogether, I believe, something like 164,000 supplies?—Yes.

22,298. How many of those are now under constant supply?—Eighty-six per cent. are now under constant supply. They are being done as rapidly as possible, but it takes a long time; a large staff of men are required to see to the fittings and all, before they are fit to take the constant supply.

22,299. Have you many complaints as to your supply?—No; it is astonishing how very few complaints come in, comparatively speaking, considering what a gigantic

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Mr. H. C. B. Bowles. concern it is. In 1897 we only had 685 complaints. Of those, 432 were due to the faults of the consumers' internal fittings, and 90 of them to temporary interruptions of supply, such as alteration and repair of mains, and other unavoidable causes, leaving 163, of which, on examination, the supplies were satisfactory, and no ground for complaint could be discovered.

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22,300. Then there was not a single case in which the Company was in fault?—No.

(*Mr. Pope.*) The 90 cases of temporary interruptions of supply would appear to be instances.

(*Witness.*) We could not help that.

22,301. (*Chairman.*) What do you call unavoidable causes besides the alteration and the repair of mains?—Sometimes a main will be defective and split; that would cause a temporary interruption.

22,302. That is a case of the repair of mains; you say there were temporary interruptions due to alteration and repair of mains or other unavoidable causes?—The mains might have to be shut down for some purpose to let the air out of the different pipes; sometimes they have to open certain valves and have to shut down the pipes during that time.

22,303. I do not ask you about the quality of water you supply, because we have got Sir Edward Frankland's reports?—We consider our water is the best in the world. It contains both spring water, which is hard, and the soft water of the Lea. Those being mixed together, we think it is the very best water that can possibly be supplied.

22,304. You have had recourse to the Thames by the Staines Reservoirs scheme?—We are commencing it; we shall not expect to get any help from it for some years. The company have always looked forward in times gone by; they used to look forward for about 10 years to see that they had adequate water to supply their consumers; but after Lord Balfour's Commission we went into the question, and now we have got sufficient works in hand which will carry us up to 1931 at least. Everything being in very good order and condition, we consider we are a very good going concern, and can fulfil what we are required to do up to that year.

22,305. Were you obliged to curtail the supply last year, or in the year 1893?—Not at all. We have never given a short supply or anywhere near; we have always had a surplus of water.

22,306. (*Mr. De Bock Porter.*) Is not your company somewhat disadvantageously placed as regards getting its supply at Staines, that is to say, will you not have to make a very long main from Staines up to Fortis Green?—Yes.

22,307. Which will not be available for distributing any water in that area, but will bring it to the position in which it can be distributed?—Yes, it will bring it to our works. We had to go for a subsequent Act of Parliament to provide for that conduit, and to bring it across.

22,308. Will not that conduit be a very expensive one?—It will cost a great deal of money; there is no doubt about that.

22,309. You are disadvantageously placed as to getting your water at Staines, are you not?—Not more so than the East London I presume. They have had it for some years, and they find no difficulty in getting their water across.

22,310. But no other company will have had to embark in such a heavy expenditure in getting the water to its centre for distribution as your company?—It certainly will cost a certain amount of money. We might have gone on getting our water from Hertfordshire if Parliament had not stopped us temporarily from that. There is no doubt about it; there is plenty of water in Hertfordshire.

22,311. The provision of that conduit is the one that has been roughly estimated, is it not, as costing possibly a million?—Yes.—The Act of Parliament provides for a million of money to carry it out, but that is not only the conduit, but of course there are pumping stations and filters and subsiding reservoirs in that amount.

22,312. But the whole of that amount is carried through a district which you cannot supply—you cannot recoup yourself from any part of that district?—That is not our district for the supply of water.

22,313. (*Chairman.*) You say that the change in your system of charge took place in 1852. Did Serjeant Wrangham represent your company in 1852?—Yes, I believe he did, but I do not recollect that.

22,314. Your Bill was one of the Bills discussed in that year before the same Select Committee, was it not?—I presume so. I think it must have been just before I joined the Board. I did not join the Board till June 1852.

22,315. Although the statute of 1852 gave you the right to charge on a certain scale of charges, you do not charge that scale in the City, do you?—No. We have given the City a great advantage by not putting them up near to their full rating. In most cases they only pay about two-thirds of what might be charged by the New River Company.

22,316. Do you give a similar indulgence in any other part of your district?—No, it would not admit of it I think. Most of our area now is being built on with such a very poor class of property, or with a much lower class. The rent of the houses that are being built now is generally about an average of 37l. or 38l. a year, which brought down to the rateable value would be 30l., and that gives the lowest scale of charges. They generally have a bath with hot and cold water, two sitting rooms, and three or four bedrooms, and a constant supply, and all they pay is a 1d. a day for water.

22,317. Do you mean per head?—It is 1l. 4s. they pay per house.

22,318. Who do?—These small houses which are rated at 30l. a year, and which have a bath room and hot and cold water laid on.

22,319. On the other hand, the City properties I suppose are very highly rated, and use very little water?—There are a very large number of people who go to the City every day, and I think there is a great quantity of water used. Not only that, but the mains are always charged and kept ready for fire purposes, which is a very great thing for the City to have this water to fall back upon, for which they pay nothing.

22,320. As I understand, you only charge in the City two-thirds of what you might charge?—About that; it varies according to the class of buildings.

22,321. Was your scale in 1852 fixed at the same time as the Chelsea scale?—I forget the year of the Chelsea, it was fixed in the same session, I believe.

22,322. I want to draw your particular attention to what Mr. Serjeant Wrangham told the House of Commons on that occasion, namely, that "the Committee must be contented with that amount of credit which they are prepared to give to the statement which they have heard from Mr. Simpson, he having carefully gone through and compared these two scales of rating, as adjusted in the Parliamentary scale, with a view to secure to his company no larger income than that which they have enjoyed under the actual scale, keeping in view that he is the gentleman, practically speaking (though officially it is the Board of Directors), by whose discretion the actual rate is to be adjusted within the Parliamentary limit. They have heard from Mr. Simpson that this scale has been adjusted with that view, and that he believes it will answer the purpose. Mr. Simpson was asked, 'In your judgment, will you tell the Committee whether that is not the case that it will produce the same rental,' and he answered, 'I believe it will.'" Do you concur, Mr. Bowles, that that scale was fixed with that view of giving the income they could get by agreement in 1852?—It might have been at that time.

(*Mr. Pember.*) I thought Parliament altered the scale?

(*Mr. Littler.*) Your Lordship will remember that after that—I pointed it out to the Commission a long time ago—Parliament did not accept that scale of Serjeant Wrangham's at all; they insisted on a lower scale. That was all rejected; and then a subsequent scale had to be discussed, and it was very much lower than Serjeant Wrangham's scale.

(*Mr. Pember.*) They did not get the maximum rates they asked for?

(*Mr. Littler.*) No, they did not.

(*Mr. Pope.*) I have no doubt that the fact was the New River Bill was discussed subsequent to discussion which took place on the Chelsea, which settled the particular rates in the Act of Parliament, and, of

course, it was accepted on the New River Bill, as a matter that had passed.

(Mr. Littler.) Your Lordship will find, on page 472 of the proceedings on the Chelsea Bill, in 1852, the Committee dealt with the first of them: "The Committee are quite ready to enter into this subject of rating, without waiting for the other Bill. We are quite willing, also, to state to you the opinion which the Committee have formed upon the rates, and to submit it to your consideration. In the first place, there will be two lines struck out: 'If there be no water-closet, fixed bath, or high-service in the dwelling-house, to be supplied with water at the following rates.' That will come out." And your Lordship will remember that in the New River, and all the other Acts which were then passed, there is nothing said about water-closets below 30*l.*; it is only when the houses are above the 30*l.* In consequence of striking out these words, there is no charge for water closets, and no charge for baths below 30*l.* in the district. They are like the New River. "If there be no water-closet or fixed bath, or high-service in the dwelling-house, to be supplied with water at the following rates. That will come out." Then the Chairman goes on: "With respect to the words, 'where the annual value of such house should not exceed 50*l.* at a rate per cent. per annum not exceeding,' we propose to leave out the words '5*l.*' and to insert instead '4*l.*' 'Where the annual value of such house shall exceed 50*l.*, but not exceed 100*l.*, at a rate per cent. per annum not exceeding,' we propose to insert '4*l.*' 'Where such annual value shall exceed 100*l.*, but shall not exceed 200*l.*, at a rate per cent. per annum not exceeding 4*l.*' That we retain at 4 per cent. So that those three rates will all be 4 per cent. We propose in all the following cases to put the rate at 3 per cent. 'Where such annual value shall exceed 200*l.*, but shall not exceed 300*l.*, at a rate per cent. per annum not exceeding,' we propose to make it 3 per cent., and so in the following cases. We have reduced them to the two rates of 4 per cent. and 3 per cent." Then we go on: "If there be a water-closet or water-closets, or fixed bath or baths, or any high service in such dwelling, then, in addition to the rates above specified, the following rates shall be payable; that is to say, 'Where the annual value of such house shall exceed 25*l.*, but shall not exceed 50*l.*,' we propose to substitute 'Where the annual value of such house shall exceed 30*l.*,' instead of 25*l.*" So that, your Lordship sees, the result was to take away from the companies a charge for water-closets or baths, below 30*l.*, by striking out those first words, and then adding the words with regard to the 25*l.* Then, my Lord, came this: Mr. Brett said, "Leaving the 50*l.* (Chairman.) From 30*l.* to 50*l.*, instead of from 25*l.* to 50*l.*" Then Mr. Serjeant Bellasis said: "Perhaps, sir, you will allow us time to consider those amendments." So the companies were very near rejecting the Bill altogether, in consequence of the change which the Committee made. Then, the next morning, on the 5th May, Mr. Serjeant Bellasis said this:—

(Mr. Pope.) It is a long time ago; but, on the 6th December, 1897, this question was gone into at considerable length, and it is upon the notes; and I do not know that we should question very materially what Mr. H. L. Cripps gave as the history of the Parliamentary contest at that period.

(Mr. Pember.) But, mind you. Mr. H. L. Cripps quoted it as if Serjeant Wrangham had got the rates he asked for.

(Mr. Pope.) In cross-examination, on the 20th December, the whole of this matter is brought out.

(Mr. Littler.) I was only going to add one thing—the next morning Mr. Serjeant Bellasis came and said the Company bowed to the decision of the Committee. I will just read the words; there is only one paragraph. "With the permission of the Committee, I will recur, once more, to that very serious question upon which the Committee were occupied when they adjourned yesterday. That is the question of the rates which you were then good enough to suggest to us. With your permission I will, in order that we may be quite sure that we understand what the Committee intended, refer to the clause 'passage by passage.' Then he begins reading:— "Where the annual value" and so on. Then he went on, and there was a long discussion, but the end of it was that, practically, the decision of the Committee

stood exactly as it had been on the previous day, although it was urged very strongly indeed that it would be very difficult for the company to manage with it. This is what Serjeant Bellasis said as to this: "Since the Committee adjourned yesterday, as you may suppose, upon so serious a proposal as this, the Chelsea Company have given the proposal their most serious and careful consideration. It is plain, and, no doubt, the Committee will themselves see, that it involves a serious reduction upon their water rental. The question, therefore, for us to consider was whether the reduction of water rental was such (for that is what we applied ourselves to) as would endanger and interfere with and jeopardize the carrying on of the new works which we are contemplating by this Bill. Accordingly, we took the simplest course we could, which was to ask Mr. Simpson the plain question, not whether he liked the clause you proposed, but whether those rates being determined on by the Committee, he could carry out his works. And Mr. Simpson has answered as simply: 'I can; but,' he says 'I shall have no margin. I can carry out the works, but, at the same time, we must look for a further income by the extended works of the Company after the new supply of the Company should have been brought in.' Then he goes on, and says, "On the part of the Chelsea Company"—

(Mr. Pember.) He says he can do it, but it leaves him no margin. Of course, that means maximum rates.

(Mr. Littler.) He goes on, "At all events, that acquiescence will give us a facility for proceeding at once with our works, in the hope that we shall be able to get an increase of profits by the increase of customers, which we hope to obtain when our new supply is brought into the metropolis. I may take the liberty of saying here, I am sure that the inquiry which we made last night, as to whether or not we could acquiesce in the terms you have proposed to us, satisfied us of the extreme wisdom of your determination to take the rating question in each company's Bill separately."

(Mr. H. W. Cripps.) How do you think all this, Mr. Littler, bears on the case before us?

(Mr. Pember.) Because there is a suggestion you should repeal our Act. That is why.

After a short adjournment.

22,323. (Chairman.) I do not know whether you can throw any light upon the main question for us, namely, the financial expediency of purchasing your company from the point of view of the water consumer and of the ratepayer?—I cannot see, myself, how the water consumer or the ratepayer will be helped at all. Everything is conducted upon such an economical scale with regard to the New River management that I do not think it would be possible, at any time, to get any advantage for the consumer or the ratepayer, and more particularly if a municipality were to buy it up or take it over. I think that there would be a larger outlay—they would have to have even a larger staff, than we have, to look after it.

22,324. Why?—Because, at any rate, at first they would not understand the position of the whole of the company, and they would not understand the working of it. It has taken a great number of years to get all our men into position, and to understand the working of it.

22,325. But your men would probably be continued in their present positions by any purchaser?—If so—

22,326. (Mr. De Bock Porter.) It would be taken over as a going concern, would it not?—Yes. It requires a great deal of care in the looking after.

22,327. (Chairman.) We know what your present income is?—Yes.

22,328. We have had the figures laid before us of your present income, and we know that it is a growing income; it has been growing, has it not, for years?—Yes, it has been progressive; and the expenditure has also been very great. Our taxes have increased; now we pay nearly 70,000*l.* a year in rates and taxes.

22,329. Can you give us any information that will show how much of that capital of 1½ millions, roughly speaking, fixed in 1852, represents the value of real estate, or of a commercial water-selling undertaking?—I think it has been always kept all together, so that I do not think I could give you any idea what the different lands cost.

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22,330. Can you tell us how that figure of one million and a half—I am not giving exact figures, you know—was arrived at?—They went into it all at the time of the Act of Parliament; they had the figures before them at the time.

22,331. I want to know what was gone into, and what was the result?—It was in the evidence of 1852; I really cannot carry in my mind exactly how they made up the amount.

22,332. Very well, you cannot tell us. Your secretary, perhaps, would be able to tell us something about that?—I do not think that he would be able to give you any further information. I think the phraseology is that it was put at a million and a half and “upwards;” is not it?

(Mr. Pope.) Yes; but I should think we can find in the evidence of 1852 what the calculation was which was presented to Parliament, upon which that was based—because that is what the noble Chairman is asking.

22,333. (Chairman.) You say you see no advantage to the water consumer in a purchase of your company by any public body?—I mean to say it is so well-conducted at the present time, and they seem to be so well satisfied with their rates, that I cannot see they will gain any advantage. The chances are that the rate of wages that a municipality would pay would be much larger than a private company would pay; and they would have then to get a rate-in-aid, which, in the case Manchester, I believe, is 3d. in the £.

22,334. Do you think it would make any difference to the City of London?—I think it would make a very great difference to them, because I have no doubt that any municipality buying the water companies up would put them up to their full rateable value at once.

22,335. (Sir John Dorington.) In fact, a public body would be unable to draw that distinction which you draw between the legal consumer and a person who is deriving actual benefit, that is to say, the City of London does not want the water to the extent of its rateable value, and so you give them a great advantage, do you not?—I think we can deal better with it. Of course, if it were a public body, they would feel it their duty to put everybody up to their full extent so as to get the amount.

22,336. If they charge upon rateable value, the City of London would have to pay upon rateable value the same as anybody else?—Yes, the whole of it.

22,337. And they could not draw the distinction which you draw—out of pure generosity. I suppose—expediency, shall we say? [No answer.]

22,338. (Mr. H. W. Cripps.) It is a mere matter of opinion, of course, which would be the fairest way of charging?—Yes.

22,339. (Chairman.) Any purchaser would get the legal right to charge your full statutory rate?—Certainly, and the Company has it, but they do not exercise that power.

22,340. I should be very glad to know why you do not exercise it now; is it that you are already so much overpaid that you do not dare to charge more?—Oh, dear, no.

22,341. Then why do you not charge it now? Why do you let off these rich bankers and merchants in the City?—It was done at a time when we had to revise our rates in consequence of the Act of Parliament, and we thought—

22,342. Stop, stop; at a time when you had to revise your rates in consequence of the Act of Parliament?—Yes.

22,343. In 1852 do you mean?—Torrens's Act, I think it was. When it was brought in we were obliged to charge upon the net annual value; the annual value was then defined, and in consequence of that the board took it into consideration, and on going into it very carefully they thought that it would be such an immense jump to put them up to their full rateable value that they decided they would not do it.

22,344. Up to that time you had been charging on the gross rateable value, as I understand?—No, on the annual value as it was; that is, the Company took their view of the annual value, and it was the rent of the house which guided them to a certain extent.

22,345. Then came Torrens's Act, which cut you down to the net rateable value?—Yes.

22,346. Therefore diminished what you were entitled to charge?—The City—

22,347. Just assent to that first. Torrens's Act cut you down to the net rateable value?—Yes, they took off certain charges, which came down to the net annual value.

22,348. Very well; then, being cut down to a lower annual value, you thereupon generously gave the City a present of one-third of that charge?—You see, in the City we did not put up our old customers to a great extent. When we came to look at it, as the City was being rebuilt then, and the rents became very much higher, we did not interfere as long as they were old tenants, and they were down at the low rates, the old rates, that had been in existence for some time. They had gradually gone up in value, but we had taken no notice of that. We had to come to some sort of understanding how we were going to rate the City.

22,349. If you had rated the City at the amount which your Act of Parliament authorises you to rate them at, you would have been able to make larger deductions to all your poor customers in less prosperous districts?—Indeed, on the other hand, it is the poor people who do not pay much for the water. We are obliged to make the rich, you may say, pay for the poor.

22,350. But you do not make the rich pay as much as you might?—No, not in the City.

22,351. Why do you not? Why do you not bleed the City which is prosperous?—It is the outer districts that we are losing money by supplying. When we are supplying water at a penny a day it cannot be expected that we should keep on at that.

22,352. (Mr. De Bock Porter.) Was it not the case that before Torrens's Act you used to take your own view of the annual value?—Yes, that is what it was.

22,353. After Torrens's Act you looked at what the rateable value was, and the difference was so great that you did not take the whole difference?—We decided not to go up to the full rateable value. We found that we could rate the City when we came to look into it under the new Act to that extent, but the board decided that they would not go to the full extent.

22,354. Before that you had taken your own view of what was annual value, and you had not gone to the rate-book at all?—We judged each house on its merits.

22,355. (Chairman.) Do you mean to say that your estimate of annual value was less than the real annual value?—Yes, a great deal less.

(Mr. Pember.) He says, as I understand it, that they were very old payments which his customers had made.

22,356. (Mr. De Bock Porter.) Was there any compact with anybody in particular with reference to this two-thirds?—Oh dear no.

22,357. No one negotiated on behalf of the ratepayer and the consumer?—Not at all.

22,358. It was an act of grace on the part of the company?—We simply went into the whole rating, and went through every item, and we put it as fair as we could according to the circumstances.

22,359. (Chairman.) 12l. odd per cent. being the dividend?—I forget what we were paying at that time; I have no doubt you are right.

22,360. (Sir John Dorington.) Are the houses of 30l. value and below, to whom you make this favourable rate as well treated as the others?—They get a constant supply of water.

22,361. I did not mean that; I meant with regard to what they pay the 1l. 4s. is a very favourable rate for a 30l. house and below?—It is a very small rate, I consider.

22,362. It is a very favourable rate?—Very favourable to the consumer.

22,363. It is more favourable than above 30l.?—Certainly, because if they were rated at 31l. they would have to pay nearly double for the water. There must be a line drawn somewhere.

22,364. And in the City of London where the rates are very high, you give an equally favourable rate by taking so much off?—Yes.

22,365. So that you favour both ends?—Yes.

22,366. (Chairman.) Have you at all considered, supposing you are to be bought, what arbitration terms you would consider reasonable and fair?—Of

course, the only terms upon which a company ought to be bought, we consider are, that if you take a good going concern, with everything as favourable as it can be, and paying a fair rate of interest—that it ought to be bought upon the terms of the Lands Clauses Act.

22,367. Why do you pin your affections to the Lands Clauses Act?—Because I think that is the fairest way in which it might be dealt with. Other private companies I believe have been bought up under those circumstances.

22,368. The only thing that the Lands Clauses Act—plus the decisions upon it—provides, is that the thing to be bought must be valued according to its value to the vendor?—That would be according to income, would it not?

22,369. That is all the Lands Clauses Acts says?—It would be as a going concern, and a question will be how much you will get a year for it. Then there is the question of the natural growth of that concern, and future prospects.

(*Mr. Balfour Browne.*) That is only another way of saying, according to its value to the vendor.

22,370. (*Chairman.*) Is there anything in the Lands Clauses Act that you think is essential to justice?—I do not follow.

22,371. Why do you want an arbitration under the Lands Clauses Act specially?—Simply because the other private companies that have been bought up by municipalities, have been bought up under the Lands Clauses Act, I believe, and they have been dealt very properly with. That is the only guidance that I have.

22,372. (*Mr. De Bock Porter.*) They have been occasionally bought by agreement, have they not?—Yes, I have no doubt they got better terms by that.

22,373. Have you got in your mind that under the Lands Clauses Act there will be some compensation for compulsory sale?—It is generally taken so.

22,374-5. Why did not you say so?—I did not understand that that was your question.

(*Chairman.*) That does lurk in your mind therefore.

(*Mr. Pember.*) It lurks in a great many minds, but it is not in the Act.

(*Chairman.*) I know it is not in the Act.

22,376. (*Sir John Dorington.*) You wish to be dealt with upon grounds for which there is a precedent?—Yes.

(*Mr. Pope.*) So that we know where we are.

22,377. (*Mr. H. W. Cripps.*) You must have considered this matter of purchase a good deal, because you see you were connected with the company as long ago as 1852?—Yes.

22,378. That was some time before you entered into negotiations with Mr. Smith?—Yes.

22,379. You were a director at the time?—I was.

22,380. And you came to an agreement with Mr. Smith?—Yes.

22,381. Everything was settled?—Yes.

22,382. And Lord Cross brought in an Act of Parliament to make that settlement good law. I daresay you know that?—And the directors were satisfied at that time with the settlement.

22,383. That is to say you were satisfied with the bargain that Mr. Smith and your directors had made?—That was the best that the directors could get from Mr. Smith.

22,384. And if that Bill in Parliament of Lord Cross's had been carried, there would have been an end of the matter, and you would have been satisfied?—We must have been. We should have taken the money.

22,385. Then, after that, do you know that Lord Cross's Bill was referred to Sir William Harcourt's Committee?—Yes.

22,385a. You know what went on before Sir William Harcourt's Committee?—Yes.

22,386. You were a party to that?—We were no party to that.

22,387. So far as that went, you were supporting the Bill—in effect, you were favourable to the Bill?—There was no Bill.

22,388. It would have settled your compensation?—I do not think there was any Bill. I do not recollect any Bill.

22,389. Yes, there was?—What Bill was it?

22,390. Technically you are quite right. It was the agreement itself which was referred to the Committee?—Then the companies took a neutral position upon it.

22,391. The whole question before Sir William Harcourt's Committee turned upon whether they were good terms for the companies or not. The opponents to the Bill, you know, were the Corporation of London, and parties in London who said you had got too good terms. That was so, was it not?—They might have said so; yes.

22,392. The result was that the other side was successful, and that the Bill was thrown out; or, when I say it was thrown out, there was a recommendation from Sir William Harcourt's Committee that they did not think the terms could be satisfactory to the public. Was not that the case?—That might have been the case at that time; but it has not proved to be so, because they are worth more now than they were—

22,393. But so far as the question went of continuing your work or handing it over to a public company was concerned, that matter had been settled between you and Mr. Smith. The question of the amount was the only thing that remained in doubt?—It was the amount that we went into, but as far as I can recollect, it was not settled who were to take over the companies.

22,394. Then this same question came again before Mr. Plunket's Committee, did it not—the question came up again as to whether you should be purchased or be left as you were?—On the London County Council Bills.

22,395. Yes. I do not know who was the author of the Bill—I forget now, but the question was whether purchase should take place, or whether you should be left alone?—There was a Bill for the purchase of the companies.

22,396-7. You were a director of the company at that time?—I was.

(*Mr. H. W. Cripps.*) And Mr. Pember, who appears for you now, appeared for you upon that occasion.

(*Mr. Pope.*) Mr. Pember does not appear for the New River Company now, nor did he then.

22,398. (*Mr. H. W. Cripps.*) That is a small matter. Mr. Pember appeared for you on that occasion, at any rate, did not he?—I cannot say that Mr. Pember actually appeared for us. He appeared for some of the companies, I have no doubt.

22,399. Do you remember on that occasion that the whole question turned upon this: it being admitted that there should be a purchase, the whole question turned upon what the direction should be to the arbitrator?—I do not think it went so far as that.

(*Mr. Pember.*) That was not before Sir William Harcourt.

(*Mr. Pope.*) We never admitted before any Committee at all the necessity of purchase. We submitted.

(*Mr. H. W. Cripps.*) I have read carefully through the whole of what took place before the Committee.

(*Mr. Pember.*) Mr. Smith negotiated with us all on the basis that we were unwilling to sell.

(*Mr. H. W. Cripps.*) No doubt that was so. You came there prepared to oppose the Bill altogether.

(*Mr. Pember.*) Quite so.

(*Mr. H. W. Cripps.*) Then Mr. Plunket's Committee said at once, "We have made up our minds not to go into that. You must confine yourself to the question of amount and the question of the clause to arbitration."

(*Mr. Pope.*) Not amount.

(*Mr. H. W. Cripps.*) Yes, it became that.

(*Mr. Pember.*) If you do not mind my saying so, sir, I think you are really confusing two events in the year before. Lord Cross's Bill never came before a Committee at all.

(*Mr. Balfour Browne.*) Forgive me, Mr. Cripps is not talking of Lord Cross's Bill.

(*Mr. H. W. Cripps.*) I have got to Mr. Plunket's Committee.

(*Mr. Balfour Browne.*) And your statement, sir, is absolutely correct.

(*Mr. H. W. Cripps.*) Before Mr. Plunket's Committee you appeared for the Company.

*Mr. H. C.
B. Boules*
23 Jan. '91

Mr. H. C. B. Bowles. *Mr. Pember.*) You are missing out, sir, the intermediate stages.

23 Jan. '99 *(Mr. H. W. Cripps.)* The whole question there turned upon what should be the clause in the Bill.

(Mr. Balfour Browne.) I appeared before the Committee, and what Mr. Cripps has said is absolutely correct.

(Mr. H. W. Cripps.) I do not know whether it is so—I have my own impression upon it; and I think that is what took place before the Committee.

(Mr. Balfour Browne.) He said he would not go behind Sir William Harcourt's decision, and, therefore, we must address ourselves to the clause.

(Mr. H. W. Cripps.) Quite so.

(Mr. Pember.) Only, if the honourable member of the Commission does not mind my saying so, he was rather suggesting that we went there consenting to purchase. Now, we did not do anything of the kind.

(Mr. H. W. Cripps.) No.

(Witness.) We did not agree.

(Mr. H. W. Cripps.) No, you went there to oppose.

(Mr. Pember.) Yes.

(Mr. H. W. Cripps.) But after what Mr. Plunket said as to the decision of the Committee, you acquiesced in that.

(Witness.) No, never.

(Mr. Pember.) I acquiesced in the same sort of way that I should if Jack Ketch had got a noose round my neck at the moment.

(Mr. H. W. Cripps.) I can refer to your own words there, that the matter after that turned entirely upon what the clause should be.

(Mr. Pember.) No doubt.

(Mr. H. W. Cripps.) And if that clause had been satisfactory to you, there would have been an end of the matter again there, would not there?

(Mr. Pember.) No.

(Witness.) I cannot say that.

22,400. *(Mr. H. W. Cripps.)* Was not the whole question of the clause in effect whether there should be a direction to the arbitrators that they should not allow anything for compulsory purchase? Was not that the essential question?—There was a clause proposed, but the companies did not accede to that clause in any way.

22,401-2. *(Mr. H. W. Cripps.)* No, you did not. And the question which was argued at such length was, whether that should be the clause, or whether there should be nothing at all on the matter, but that it should be left entirely to the arbitrator; that was the whole question. Now, at that time, you would have been satisfied to have gone on with the purchase, supposing no such clause as that against compulsory purchase had been put into the Bill, should you not?—No, we were not satisfied at all. We were there opposing the Bills brought in by the London County Council, and we were never satisfied at all with the purchase.

(Mr. H. W. Cripps.) Though you were there opposing the Bill, you contested the question upon the words of that clause.

(Mr. Pember.) No doubt.

(Witness.) That is as far as we had got.

22,403. *(Mr. H. W. Cripps.)* Supposing that at that time the County Council had withdrawn their suggestion that there should be a clause preventing the arbitrator from going into compulsory purchase, there would have been an end of the matter, would not there? You would have been satisfied?—I cannot say. I daresay there were other matters to fight out as well.

(Mr. H. W. Cripps.) There may have been with reference to the Kent Company.

(Chairman.) They were opposing the whole—they were opposing everything.

(Mr. Pember.) That discussion on clauses, which you are very properly narrating, if I may venture to say so, took place before the decision of the preamble of the Bill.

(Mr. H. W. Cripps.) Yes, they never decided the preamble of the Bill in point of fact.

(Mr. Pember.) No.

(Mr. H. W. Cripps.) They told you it was not worth while to go on. You know nothing is more common than to postpone the preamble of the Bill until clauses have been settled, where the whole question is a question of clauses.

(Mr. Balfour Browne.) The House of Lords always does that.

(Mr. H. W. Cripps.) It always did that in my time, and so do the committees of the House of Commons constantly say: "We will not say anything about 'preamble, this question turns entirely upon clauses.'" They deal with it upon the real question, and then the preamble follows as a matter of course.

(Mr. Pember.) So long as it appears that it was the committee that made it a matter of clauses, and not a matter of preamble, and that it was not ourselves, I have no objection.

(Mr. H. W. Cripps.) On the contrary, I say it was not yourselves. You went there to oppose, but the Committee made it a question of clauses.

(Mr. Pope.) They said they would not go behind the previous decision of Sir William Harcourt, and we gave way—submitted; we did not acquiesce, we submitted.

22,404. *(Mr. H. W. Cripps.)* And that being so you went on upon clauses. *(To Witness.)* All I want now is what your opinion at that time was, as you must have been a party to it, whether, if that clause had been made satisfactory to you, the purchase would not have gone on as far as you were concerned?—Of course, there were other questions to consider.

22,405. There might have been some other. Let us take it that that was the main point to consider?—Of course, the clause was the point which we stood out against.

22,406. Putting it shortly, you are of opinion, are you not, that it is not worth the consumers' while to purchase at the price which you think you ought to receive?—I think, as it is a good going concern, that it might be made still to pay very well. It is according to who takes the management of it. The only management that I can see would be a permanent management; some board who would always be looking after it, and not a board that would be elected only every three years, because by the time they had begun to understand it they would go out of office very likely.

22,407. Then you think a purchaser might be found where it would be worth while to do it?—I think the question of the supply of water to the whole of the Metropolis and outside the metropolitan area, with its population of about five millions of inhabitants, is such a very gigantic concern that there is no Board or Statutory Committee who could undertake it; and I think that the Government would be the only people who ought to take it up—a Government Department.

22,408. My question to you is a much smaller matter than the large question which you are going into. Suppose you differ from the intended purchasers, whoever they may be, about whether a certain question should be one of the matters considered or not, would it not be a perfectly legitimate thing to leave that to the arbitrator?—If the companies are to be purchased, and they would have to go to arbitration, I think the arbitration ought to be conducted in such a way that the arbitrator should not be fettered either one way or the other.

22,409. Quite so; you would leave everything to an unfettered arbitrator?—Certainly.

22,410. Taking great care that the arbitrator should be a person whom everybody would have confidence in. You cannot get beyond that?—I do not think so.

22,411. *(Mr. Lewis.)* Looking to the uncertainty of arbitration, if you must be purchased would it not be more satisfactory to be purchased on the basis of your net income? Then you would have a certainty, and you would know where you were?—Of course, if we are to be purchased the income would form a very proper basis to be taken upon.

22,412. Ought it not to be the only basis?—I think there is something else to be said as to future prospects.

22,413. Yes; but then there is future expenditure, you see, to go against that?—I think that we could show, very likely, that there might be some profit still to be made beyond the expenditure.

22,414. There is one other question I should like to ask you. Was the Clerkenwell Estate dealt with in the agreement which you entered into with Mr. Smith, or was it excluded?—It was all included.

22,415. Was that to be left with the Company?—No, I have made a mistake. I am told that the Clerkenwell Estate was retained.

22,416. (*Mr. H. W. Cripps.*) Under that agreement with Mr. Smith you would not have had to have gone to an arbitrator at all, because the amounts were settled and determined?—No; the Company and Mr. Smith had agreed upon terms.

22,417. You are asked about whether one thing or another might not be a fair basis to go upon. Would it not be a fair basis to leave the whole question in every way to the arbitrator. Say a sum of money is to be paid for this as between vendor and purchaser, and let the arbitrator fix, after hearing everything, what that sum of money shall be?—Of course, if a concern is to be sold, the fairest way is to leave that to an arbitrator. There is no doubt about that.

22,418. (*Chairman.*) The question we have got to determine is whether the result of that arbitration will be a gain or a loss to the water consumer?—That, of course, we can hardly go so far as to say.

22,419. That is the question we want you to throw light upon if you can. Of course, it is always possible to get a fair decision from a proper and wise arbitrator. But the question we have got to determine is, whether the result of that decision of the fair and wise arbitrator will be to entail a greater charge upon the water consumer or the ratepayer, or a less charge. Can you help us upon that question, which is the only one we have to consider?—It is according, of course, to the amount that is paid for the concern.

22,420. What in your judgment ought a fair arbitrator to give for the concern?—Well, of course I cannot say.

22,421. I do not ask you for your figures. But, for instance, ought he to take so many years' purchase of the present income?—I think he ought certainly to give the full value of the concern by way of income; that the shareholders should not be selling at a loss of income for any time.

22,422. Do you look upon it that there is a certain prospective income for every shareholder in the New River Company?—I think that if the company goes on, properly managed, it will be able to keep up its dividends and also pay a little more.

22,423. Then in your judgment a fair arbitrator ought to award the present value of that possible prospective income?—Yes, as well as the income at present.

22,424-5. Then the purchaser will have to pay the present shareholders what represents those two items and also provide a sinking fund?—I do not know about the sinking fund.

(*Chairman.*) Parliament always requires one.

22,426. (*Mr. H. W. Cripps.*) You have no reason to suppose the arbitrator will not do what is fair when the question is put before him. If you prove to the arbitrator that there will be some prospective improvement, it would be a fair thing for the arbitrator to consider, would it not?—I should not have thought that there was any doubt about that.

22,427. (*Chairman.*) The whole question we have to decide is whether that would be a loss or gain to the purchaser?—I am afraid I cannot help you.

22,428. (*Major-General Scott.*) Would it not be the business of the arbitrator to so discount all future profits on the purchase price that a purchaser would really have nothing to look forward to in the way of extra profit?—That would be the proper way I have no doubt.

22,429. (*Chairman.*) Then he would have nothing to look forward to in the way of extra profit; he would have paid it all down and he would have to provide a sinking fund?—I do not understand your question as to a sinking fund.

22,430. (*Major-General Scott.*) Then comes the question whether the cost of administration by a public body would be less economical than that of your own directorate?—I should think that the concern is carried on as economically as it can be with the staff, and I think that Mr. Soneham in his report says so. He has got every reason to be satisfied.

22,431. Do you think that under a public body, and what you were alluding to just now, a body periodically elected, the administration would be cheaper or more expensive?—I think that considering the way in which the rate of wages seems to increase, under a public body, they would have to pay a great deal more than we are paying at present.

22,432. Then with regard to the question of your Thames supply, will the profit on your Thames water be as great as your profit on your Lea water?—I think the Thames supply will assist us in keeping up our supply for new customers.

22,433. If you charge that particular supply with the whole capital cost of exploitation of the Thames water, it being an expensive business to get it from that distance, do you expect to get as much profit out of that water, gallon for gallon, as you do out of a well in the Lea valley, or out of the Lea itself?—I have not gone into that question to see how it will work out in that way.

22,434. The distance will tell, will it not?—Not when once the money is laid out; if the money is borrowed on fair and proper terms.

22,435. But still the capital would be sunk in making a conduit which would be of very considerable length, and which would not be useful on the road until it entered your own district?—It is to supply our own district that we require the water.

22,436. Exactly. Therefore all that work that you do in bringing the water to your district is greater than would be the work that you would have to do in distributing from the Lea to your district?—Yes, but then I do not think it would be more in comparison with what there would be if we had to construct large works in the Lea valley again to augment our supply. We want more water, and I do not think this is any more expensive a way of doing it than the other way.

22,437. (*Chairman.*) You mean it would be as expensive to sink more wells or to work new headings in the Lea as to make your conduit to Staines?—To keep pace with our supply that we want year after year.

22,438. What do you say about Wales. Suppose you were driven to go to Wales, and to make a conduit of 162 miles, I think it is, would that be a more expensive way of getting the same amount of water?—I should think it would require a very large capital; but if at some future time it is necessary, and all London requires a larger supply of water, I do not see any reason why the companies should not form a federation, the same as some of them have at present formed with regard to the Staines scheme, and so bring water from elsewhere if it is required; but it would be many years, in our opinion, before it is required to go further than the Thames.

22,439. Would you expect to get 12 per cent. upon the capital you expend upon that supply? You are now paying more than 12 per cent.?—Of course; one must put one item against another, and so it balances. I do not expect it will pay 12 per cent., perhaps, right out at first.

(*Mr. Pember.*) It need not interfere with the 12 per cent. on the present capital.

(*Sir John Dorington.*) Your additional water supply with this new conduit you are making will not pay quite so well as your old water supply, and, therefore, to some extent it will water down the dividend that you are paying.

(*Mr. Pember.*) Not if it pays the interest on the money.

(*Witness.*) I do not say that, because all we want is to keep up our supply of water for the increased consumption.

22,440. (*Sir John Dorington.*) Supposing you are making a profit of 12 per cent. upon every million gallons supplied under your present system, do you think that a million gallons brought to you from the Thames will pay you as well?—I dare say it will. It will, of course, mix with the other water, and I do not think that we can work it out.

22,441. The question is whether, in reference to the capital outlay, it will pay as well as the old capital outlay?—I cannot answer that question. I have not gone into it sufficiently.

22,442. (*Mr. De Bock Porter.*) But putting it roughly, will not the capital have a first charge of 30,000*l.* upon it. Assuming it costs a 1,000,000*l.* for this

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 conduit, will not it have to bear a dead charge of 30,000*l.* a year and payment in respect of the sinking fund before you get any profit on it, because you are merely taking the water to your river head?—It will work in, of course, with our other capital. But there is no doubt that Parliament will have to take the sinking fund off, because that was only put on for a particular purpose. If the companies are to go on, the sinking fund cannot be kept up. The sinking fund, as imposed, was only put on because it was supposed that we were to be bought up shortly. If that is now thrown over, and the companies are to go on, Parliament must naturally take off the sinking fund. Because it is not a sinking fund as ordinarily understood by urban authorities and municipalities who borrow money, and who have to pay, when they so borrow money, so much towards redeeming the capital sum in so many years. This is not that sort of sinking fund at all.

22,443. No, I understand?—It is a fund in which the shareholders are to be fined for adding to their works.

22,444. Parliament will not be likely to give up the benefit of the sinking fund to the companies without having something in return?—I think it would be very wrong of them to take advantage of the companies in that way.

22,445. (*Mr. H. W. Cripps.*) I did not quite finish what I wanted to ask you. At the present time a very large proportion of your capital is debenture capital, is it not? Have you not a million of debenture capital?—One and a half millions of debenture capital.

22,446. And that is at a fixed rate of interest?—A fixed rate.

22,447. Therefore, that would not be affected at all?—

(*Mr. Pember.*) No.

(*Mr. H. W. Cripps.*) Whether you go on with the company, or whether your interest passes to a public body, it would not be affected?

(*Mr. Pope.*) No.

22,448. (*Mr. H. W. Cripps.*) That debenture interest would have to be paid the same by either?—Whoever buys it will buy—

22,449. You have no interest whatever now in increasing the capital for the purpose of increasing that debenture interest, because your own dividend upon the old capital is fixed, and the debenture capital is fixed—

(*Chairman.*) There is no restriction on the dividend of the New River.

(*Witness.*) Our dividend is not a fixed dividend.

22,450. (*Mr. H. W. Cripps.*) Quite so. I daresay you know what was decided by Sir Joseph Pease's Committee—the last Committee that sat upon this matter in the House of Commons?—I do not know what you allude to.

22,451. I allude to the Report made by Sir Joseph Pease's Committee to the House of Commons in 1896?—What is the point.

22,452. I will just read to you a sentence from that, and ask you whether you agree with it. He says: "By the now established mode of including all new stock by auction, and by the application of the sinking fund to all moneys required by the companies for their development, they have no longer the stimulus of remuneration which is one of the wholesome factors in open trade." That is to say, you have no interest in getting further profit out of your debenture capital than you have got already?—The shareholders do not gain any advantage at all from that.

22,453. And it would remain just the same. "On the other hand, the consumer is left without that care of his interests which is insured by placing the supply under a representative body, in whose election he is personally interested." Then it goes on to say—I will read you one more paragraph—"In the meantime, each session, applications to Parliament, sometimes inconsistent, and usually without concert with one another, are being made, which are opposed by local authorities and private persons. These proceedings are annually costing a very large sum of money, and the Committees of Parliament, being obliged to consider each proposal separately, without reference to any general scheme, have the almost impossible task assigned to them of deciding

"what powers should be granted to the water companies in order that they may provide for the wants of an ever increasing population, and what powers withheld to avoid the water companies acquiring an increased value, in the event of purchase by a public authority." Do you feel the force of that?—Year after year we have to go to Parliament and oppose all these bills that are brought against us. It is very harassing.

22,454. It is quite true that a very large sum of money is spent by you annually?—It is very harassing indeed to us, and also costs us a great deal of money.

22,455. If you have to go on in the same manner as you have done, have you any reason to suppose that will not continue?—We hope not.

(*Mr. Pope.*) We hope it will diminish the probability of it, at all events.

22,456. (*Mr. H. W. Cripps.*) I want to ask you a question about control. You do not think any further legislative control would help the matter in any way, do you?—I cannot see how it is required. There is a water examiner appointed, who does his work very efficiently, and looks into everything. He goes round the works, and sees what is going on.

22,457. I quite agree with you, and therefore we need not discuss that point. But I do not know whether you are aware that the only control which has been suggested on the other side which I have taken any notice of is a suggestion that two gentlemen should be appointed to sit with each of the eight companies' directors, to represent the public on those companies. Do you think that that would be effective?—I do not see that it would be any advantage whatever.

(*Chairman.*) I must not be taken as assenting to that as being the only form of control which has been suggested. A vast amount of control has been suggested.

22,458. (*Mr. H. W. Cripps.*) I was not aware of it; I daresay there has been. Can you suggest any other control?—I do not think there is any other control required. You see there is a new Act, which came in in 1897—Mr. Chaplin's Act—which involved a great deal more control; but there has not been a single case brought against the water companies yet under that Act.

(*Mr. Balfour Browne.*) Oh, yes, there has.

(*Witness.*) We have had none.

22,459. (*Mr. H. W. Cripps.*) You know the Act of Parliament which gives the control. You think that Act of Parliament, as far as an Act of Parliament can go, is sufficient?—Quite sufficient.

22,460. You add to your capital every half-year, do not you?—To the capital?

22,461. Yes. In the accounts you publish, which I have seen, there is a column stating what addition to the capital is made each half-year?—The capital outlay, you mean to say—the outlay for works—the new capital.

22,462. I do not know what it is applied to; but under the capital account there is a half-yearly addition?—We do not add to our capital at all in any way. We only have capital expenditure which is authorised by Act of Parliament, and that we every year, of course, expend.

22,463. Parliament authorises you to raise a certain amount of capital. You spend it from time to time; is that it?—The capital outlay is made out of debenture stock. That is raised for that purpose. That is the extra capital outlay.

22,464. But you, as a company, have to apply it and to spend it?—Of course we have to spend it.

22,465. And every half-year there is an addition made to the capital by what you have spent out of what you had power to raise by debentures?—We have power to raise it, and there are also new mains to be laid for all the different houses that are being built. That is how it goes out principally.

22,466. (*Chairman.*) Not every half-year, surely?—Yes, we spend about 10,000*l.* a year in driving new mains.

(*Mr. Pember.*) I think, if you look at page 60 of Mr. Stoneham's report, you will see exactly how it is.

(*Mr. H. W. Cripps.*) Here it is: "Capital account for the half-year ending December 31st." Then comes the first column—the amount which the capital stood at before that half-year.

(*Mr. Pember.*) Yes.

(*Mr. H. W. Cripps.*) Then comes the amount expended in the half-year on capital, giving altogether, in this half-year, 20,000*l.*

(*Mr. Pember.*) The total for the year 1891 was 31,130*l.*

(*Mr. H. W. Cripps.*) I only apply it to one—to show the system.

(*Mr. Pember.*) The whole of the eight companies was 506,000*l.*

(*Mr. H. W. Cripps.*) There are two matters. One is the capital which they have power to raise, another is the capital out of that which they actually expend upon their works.

(*Mr. Pember.*) Yes.

(*Mr. H. W. Cripps.*) Of course, before an arbitrator, the amount taken would be the amount actually expended upon the works, and, therefore, each half year that takes place the amount to be paid to you if your sold is increased.

(*Mr. Pember.*) *Non constat.*

(*Mr. Pope.*) Not unless the arbitration proceeded upon the basis of capital, which it would not. Upon the basis of income it does not matter what your capital is.

(*Mr. H. W. Cripps.*) I will assume that it is properly applied.

(*Mr. Pember.*) Profitably applied.

(*Mr. H. W. Cripps.*) It would increase the value to that extent.

(*Mr. Pope.*) Only if it was earning money—only if it was increasing the income; then it would increase the value.

(*Mr. H. W. Cripps.*) I will not go into the question of what the arbitrator would do, because I do not wish to interfere in any way with the arbitration.

(*Mr. Pope.*) I thought we were proceeding upon the assumption that the arbitrator would proceed upon the income that the company is earning—the earning capacity of the company—not upon the capital itself.

(*Mr. H. W. Cripps.*) In order to recoup the company more money would have to be paid each half year than the year before. It may be that they may get a *quid pro quo*, or they may not.

(*Witness.*) This amount has all been authorised by Act of Parliament for certain things.

22,467. (*Mr. H. W. Cripps.*) No doubt it has?—And we are only spending the money as we have been authorised to do.

22,468. No doubt, but you have not, I suppose, consumed and applied all the money which you have power to raise even now?—No, we can raise more money.

22,469. Therefore, as time goes on, your capital is increased by that amount?—Yes, by debenture stock.

22,470. (*Chairman.*) A purchaser would have to pay the debenture holder whatever the value of your company was?—The interest on that, yes.

22,471. Therefore, if that debenture expenditure is not a profitable expenditure to the company, it would, *pro tanto*, diminish the amount that the purchaser would pay for the undertaking?—Yes.

(*Mr. Pope.*) Certainly.

22,472. (*Chairman.*) Therefore, the effect of the expenditure of debenture capital on new works upon the amount to be paid by a possible purchaser would entirely depend upon whether that expenditure was remunerative or not remunerative?—We are obliged to lay out so much money every year, and we hope to get a good return for it.

22,473. You are not obliged to?—Yes, we are obliged.

22,474. If it does increase the value of the property there is no reason why the purchaser should not pay for that increase?—No, of course not.

22,475. I was going to ask you about control. It is a subject I did not touch upon. You say you can

suggest no additional control?—I do not think there is anything requisite.

22,476. A great deal of additional control has been suggested to us. It has been suggested, for instance, that we should look into that figure of a million-and-a-half of capital, and see whether that ought not to be cut down, because a great deal of it is now obsolete and useless?—On the other hand, when the million-and-a-half was put there it certainly did not represent anything like the amount of capital that was invested in the New River Company; and as to it having become useless, every year we spend so much upon keeping up our stock in a proper state.

22,477. Of course, that all depends upon what that million and a half does really represent, which, at present, we do not know?—It is all in the Act of Parliament, I think.

(*Mr. Pope.*) You will find that all in the Act of Parliament.

22,478. (*Chairman.*) I have already put to you that your charging up to your full statutory power is, practically, a breach of a Parliamentary agreement. We will not open that discussion again. Do not you think the Water Examiner ought to have the right to enter your premises when he likes, and as of right?—There can be no question about it, if it is necessary to give him that power. He now goes about our works as he likes. We have never refused him admission.

22,479. It is a different thing to be able to go in as of right, and to go in only by leave and permission?—We should not have any objection, I am sure, to that.

22,480. Then you assent to that amount of additional control?—Yes.

22,481. (*Mr. De Beek Porter.*) Your Company is the only one that tempers its rates to the consumer?—I cannot say.

22,482. In the City?—In the City.

22,483. I say it is the only one that does it. The others take the full rate?—That I do not know. I do not know what the other companies do.

22,484. (*Chairman.*) You gave the representatives of the Local Government Board certain information as to your works, number of miles of waterpipes, number of miles of streets and waterpipes constantly charged, number of street hydrants, and so on, and a variety of information?—Yes.

22,485. That is all given voluntarily, and by courtesy?—I believe so.

22,486. Do not you think it would be only reasonable that the Local Government Board should be entitled to ask for that, as a matter of right?—If they get what they want, I do not see what more is required.

22,487. But at any moment you can refuse it?—We should not object at all.

22,488. You say you would not, but the universe is not secure of a succession of Mr. Bowles's for all time?—There cannot be an objection, of course, to give it; there is no objection to their having a right to have those returns sent in.

22,489. Very well, then, that is an additional control which you think would be reasonable?—Certainly, if it is necessary.

22,490. All the information contained in the Water Examiner's return is now given by courtesy?—Yes, it is so.

22,491. Do not you think it is reasonable that it should be given as a matter of right?—If they get it properly, I do not see that it matters.

22,492. Are they not entitled to it?—I do not see how the company can object to that measure of control.

22,493. (*Mr. Mellor.*) Suppose the company objected?—In answer to the noble Lord, I say that the company would not object, and if the Commission recommend that measure of control, of course, the company naturally have not the slightest objection.

22,494. I do not think you quite follow the object of the question. What his Lordship wanted to know was, this, you say in the present state of things the Company give it as a matter of courtesy?—So it appears.

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Mr. H. C. Bowles. 22,495. Suppose the Company—I do not mean yourself—rescind that and refuse to give it altogether, do not you think some public department ought to have a right to demand it?—Certainly, I think so.

22,496. (*Chairman.*) And not only to demand it, but to sift it and see that it is accurately given?—If they get it, of course, they will do what they like with it when they get it.

22,497. Ought not they be able to do such things and to make such enquiry as is necessary to ascertain whether the information given to them is correct or not.

(*Mr. Pember.*) To sift the information when given.

(*Chairman.*) Yes, to sift the information when given.

(*Witness.*) I do not know where that is likely to stop. But we have nothing at all to hide.

22,498. (*Chairman.*) Then you do not object to the control I suggest to you?—Not the least, on the part of our Company.

22,499. However, I understand you do object to a control that should touch either an investigation into your capital account or into the legitimacy of your charges?—We act under Act of Parliament as to our charges.

22,500. Do you? Is anybody to have the right to ascertain whether you do or do not?—I think the consumers pretty soon find out if there is anything wrong.

22,501. A consumer is a helpless creature. He can do nothing?—They are pretty quick. I can assure you if they ought to pay 10s. 11½d., they look us up if we charge them 11s.

22,502. Have you ever had a complaint by a consumer in a court of justice?—Not in a court of justice, but we have had a consumer complain because we had charged him a penny too much in the year.

(*Mr. Mellor.*) Not many, I am afraid.

(*Mr. Pember.*) Some of their names are Dobbs.

22,503. (*Chairman.*) Here is a row of consumers facing you, you see?—Not our consumers.

22,504. The interference of consumers is surely very rare and remote, is it not?—I do not think so. They are quite capable of looking after themselves.

22,505. Can you suggest any more speedy and efficient remedy against a defaulting water company than exists at present. Cannot we touch your withers more nearly. I should like to know?—In which way are we defaulters?

22,506. Supposing some consumer says, “I do not get my cistern filled on the upper storey,” or “I am charged too much for the water,” or what not, can you suggest a speedy and easy way of that man getting redress?—I do not think there can be any better way than exists.

(*Mr. Pember.*) There might be a list of rates. The railway companies are bound to keep a list of their rates, and I do not see why the Company should not keep a list of their rates for houses of different rentals.

(*Witness.*) The Act of 1897 I think is quite sufficient. Under that any consumer can bring a complaint forward.

22,507. (*Chairman.*) No. What the Act of 1897 does is to give some public body the right to champion the cause of the consumer, which, of course, is extremely right and proper?—Upon a consumer complaining.

22,508. There are a great many cases in which one complaining may go before the Railway Commission, but that is a very roundabout, august and far-off tribunal. Can you suggest something more rapid and speedy, by which one could get into the vitals of the New River Company?—They have the opportunity of complaining to a magistrate—that is a very quick process—if there is anything wrong, if we cut off, or anything.

(*Chairman.*) Perhaps I ought not to look to you to help me much.

(*Mr. Littler.*) If a consumer thinks he is over-charged he can go to the police magistrate now on a summons for refusing to pay his rates, and under the last Act his water cannot be cut off in the meantime. If he has a *bonâ fide* dispute with the Company, the Company cannot cut off the water.

(*Chairman.*) Do you say that the Act of 1897 does that?

(*Mr. Littler.*) Yes.

(*Mr. Mellor.*) I do not quite see that. Suppose the suggestion was accepted of the water companies publishing their rates, so that everybody could see what they were, then a consumer could go and satisfy himself without going before the magistrate at all.

(*Mr. Littler.*) I do not think, as a matter of fact, anybody does not know what the rates are. They know they are 4 per cent. on their rental.

(*Witness.*) On our collectors' notice the rate is always set out.

(*Mr. Mellor.*) You would not suggest that a consumer should look at the Act of Parliament for himself?

(*Mr. Littler.*) So far as the Kent Company is concerned, we print a schedule of rates on our demand sheets.

(*Mr. Balfour Browne.*) Most of the companies do.

(*Chairman.*) You must not understand me as expressing the slightest opinion. I am only trying to elicit information.

(*Witness.*) The consumers are quite capable of looking after themselves. That is my experience.

22,509. (*Chairman.*) Parliament evidently has not thought so, because it has empowered public bodies to interfere on behalf of the consumer?—We have had no complaints since.

(*Chairman.*) Public bodies do not seem to be much more energetic than private consumers, I am sorry to say.

(*Mr. Pope.*) There has been no ground of complaint, perhaps.

22,510. (*Mr. H. W. Cripps.*) Can you tell me this—I do not see it in this half-yearly report, but what is the amount paid to your directors yearly?—The gross amount—about 10,000*l.* a year, I think it is.

22,511. I think you are wrong. You will find it upon that, because every half-year would be the same, I suppose?—The half-year is 4,800*l.* If you double that it would come under 10,000*l.*

22,512. Your direction costs 10,000*l.* a year?—Yes.

(*Mr. Pember.*) You are aware, Sir, that the amount paid to the directors of the New River Company is naturally no guide to what is paid to the others. It is in a very peculiar position.

(*Mr. H. W. Cripps.*) No, I understand that. The paper was handed to me for another purpose, and I saw the figure there. There can be no harm in asking the question, because it is a public document.

(*Mr. Pember.*) Only I did not want you to go away with a false impression. 28,000*l.* is the total amount paid to all the boards.

(*Mr. H. W. Cripps.*) Am I to take it that the boards of the eight companies receive 28,000*l.*?

(*Mr. Pember.*) 28,000*l.* in the aggregate is the payment to the directors of the whole eight companies. It is all but 29,000*l.*

(*Mr. De Bock Porter.*) It was more than 29,000*l.* last year.

(*Mr. Pember.*) Yes, you are quite right. I have got the year before. It was 29,233*l.* for last year. If you divide that by eight, that gives the average.

22,513. (*Mr. Mellor.*) How many directors have you on the New River Company?—Twenty-nine directors. Each Adventurers' share is represented on the Board.

22,514. (*Chairman.*) And what does each director get per attendance?—I think it is about 5*l.*

22,515. Every time he goes?—Each week, yes—each weekly attendance.

22,516. (*Mr. Lewis.*) That means board and committees—not the board alone?—Board and committees.

(*Mr. Pember.*) The directors of the South-Western Railway get 400*l.* or 500*l.* a year apiece.

(*Witness.*) Some of the gas companies, I believe, have a good deal more than that.

(*Chairman.*) Somebody said that the Act of 1897 prevented the companies cutting off water while proceedings were pending. I cannot find that.

(*Mr. Pember.*) I think that is a mistake.

(*Mr. Littler.*) I think I can find it for you to-morrow. But I know, as a matter of practice, they never dare to do it; and I believe they are prohibited from doing it.

(*Mr. Pember.*) I think it is not in the Act of Parliament. My own belief is that there was a decision to that effect; but I will see by to-morrow whether that is so. There is a decision of the Court to the effect that it shall not be done—a matter of injunction, I believe.

22,517. (*Chairman.*) Now, Mr. Bowles, there is another question I want to ask you on the point of control. You know that there are theories floating about that London ought to go for its future water supply to Wales. You are aware of that?—Yes.

22,518. That, of course, is a very difficult and far-reaching question?—Yes.

22,519. Do you think any sort of control could be devised by which the decision of the companies, either to be content with the Thames Valley, with all its faults upon its head, or to go to Wales, should be guided and influenced by some higher authority; would that be advisable or not?—I do not think it is required at all because the companies are obliged under their statutory powers to supply their consumers with water. When they find that they want more water, they will, of themselves, secure the water from other places—other sources; and, therefore, they will not want any control to make them obtain more water.

22,520. You might just as well apply that to the East London Company last year. The East London Company last year ought to have foreseen that its supply would fall short, but it did not?—With regard to the East London, of course, their district has increased very much more rapidly, I fancy, than they anticipated it would, and they have not had their reservoirs built quick enough for it, and this was followed by such a dry period. But for the future there is no reason why they should not be able to supply the whole of their consumers with water. They will be perfectly prepared for the future.

22,521. You do not quite grasp what I am suggesting to you. I am suggesting to you that some sort of control, that should stimulate the companies in necessary capital expenditure to meet future wants, might be not only useful to the consumer, but probably a relief to the water company directors as against their own shareholders?—I think it is unnecessary.

22,522. (*Mr. Lewis.*) Do not you get an illustration of that in connexion with the Staines Scheme. That was a scheme that all the companies should have entered into, but only three of them were prepared for the expenditure. Is not that a case in point?—I presume that the other companies saw their way clear to give their consumers a sufficient quantity of water without it.

22,523. Was not it rather a fear of the expenditure; and if there had been control on a subject of that kind might it not have been an advantage to the other companies?—You see, I cannot speak for the other companies.

22,524. (*Chairman.*) We are asking you, as a man of experience in the management of a water company, as to the kind of control which should be accepted as beneficial all round?—As I have said before, we have always kept in view a long distance ahead what we want for our consumers. We have always gone to Parliament to get more money for keeping up the supply of water, and I should think other companies would do the same. I have seen no reason to believe they would not.

22,525. Do not you see this reason to believe that they would not—that the going, for instance, to Wales would mean a large capital expenditure, which must be unremunerative for a great number of years. Let us go by steps?—In future time, if it is necessary.

22,526. If at any time it is necessary to go to Wales, it means a large capital expenditure, which for a number of years is unremunerative?—Of course, as to going to Wales, my opinion is —

22,527. I am not asking you to assent to going to Wales, or not to go to Wales; I am only asking you to assent to the proposition that, if you go to Wales, it means a capital expenditure unremunerative for a number of years?—Necessarily it would be so.

22,528. That means a diminution of dividend for the existing shareholders?—Well, for a certain time, perhaps.

22,529. Do not you think that is a step from which the present directors of a company would recoil unless they are driven to it?—I do not see why.

22,530. Do you mean to say they would not recoil from any measure that would cut down the dividends of their shareholders for a considerable number of years?—They have got to look after their own interests; and if it is to their interests even to forego dividends for a few years, so as to preserve their position, I do not see why they should not do it.

22,531. I have it suggested to me that the New River Company do not realise the mental struggles that might possibly occur to other directors?—No, the New River Company is in a very happy state.

(*Mr. Pember.*) The price they would have to pay for recusancy would be a great deal too high, because, if either from deterioration of quality or deficiency in quantity, they were not supplying enough pure and wholesome water from the Thames, they would have to go to Wales, upon pain of losing all the advantage of their statutory position.

22,532. (*Chairman.*) What do you think would happen to your company, for instance, supposing such an impossible event. If they did fail to perform their statutory duties, what could happen to them; how would they be the worse?—I cannot realise the idea at all.

22,533. I do not see that you would be a penny the worse if you dropped your supplies altogether to-morrow —

(*Mr. Pember.*) Parliament might interfere then, and buy us up for a song.

22,534. (*Chairman.*) Yes, it might. (*To the Witness.*) Have you any view about amalgamation?—For the same reason, as I said before, I think the whole supply of water for London is such a very large undertaking that it would be too much for all the companies to join together under one board to supply the whole of London.

22,535. That is an argument also against purchase, if that is so. Do you mean the concern is too big to be managed by any one hand?—I say it is, unless the Government take it in hand and have a Government Department for it. I think there is no other solution.

22,536. Why a Government Department? Government Departments have not generally been such models of efficient administration?—I think they would be able to undertake it far better than anybody else. It is such a very large question, London, you see, is so very large as compared with other towns. We have 5 millions of inhabitants.

22,537. But do you say that the water undertakings of water London is too big to be in any one hand except a Government hand?—That is what my opinion is.

22,538. (*Major-General Scott.*) Do you think it is more suited to become a State affair than a municipal affair?—Yes, certainly; for this reason, that the municipalities are always elected for so many years, and they cannot have that interest in it that a permanent Board would have.

Cross-examined by Mr. BALFOUR BROWNE.

22,539. I understand, looking at it from the Companies' point of view, you do not see a necessity for any further control?—That is so.

22,540. For instance, anything that would cut down your charges you would deprecate utterly?—I think that the present rates for water are as low as they can be, and I do not think there is any necessity for it.

22,541. Further, if we proposed to cut away all the obsolete capital and allow you merely to pay interest or dividend upon what was represented at the works by a valuation to-day, you would deprecate that?—I cannot help thinking that if the works were gone over, you would find they are worth more than they were.

22,542. I am not speaking of transfer just now. Suppose it is said that some of your money was spent as long as 200 or 300 years ago, and has altogether ceased to exist, how would you like to have your works valued structurally, and have your rates laid upon that structural valuation, cutting out all the obsolete capital?—I do not think we have any obsolete capital. It is all kept up.

22,543. Suppose the people of London make up their minds that the Thames is not a suitable source, you do not want to give any public body or department the power to say, you, the companies, shall go to Wales

Mr. H. C. B. Bowles. for water?—No, I think that the companies sufficiently think of their own benefits in the concern to look after the water supply themselves.

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22,544. You deprecate control altogether?—Yes.

22,545. Now, I do not understand you to say that you object to transfer if you get fair terms?—We are bound if it is the wisdom of Parliament.

22,546. Apart from the wisdom of Parliament, your own wisdom agreed with Mr. Smith upon those terms?—Certainly.

22,547. And you thought that you would be willing, and your shareholders would be willing, to part with your property upon the terms that Mr. Smith offered?—At that time.

22,548. So that there are some terms that you would be perfectly willing to sell upon?—I have no doubt upon certain terms.

22,549. Now, of course, looking at it merely from the public point of view, it does not matter to the companies whether your undertaking is sold to a Government department or to a county council so long as you get the same sum of money?—For the company.

22,550. It does not matter to the company?—It does not matter to the company so long as they get properly paid for it.

22,551. Whether it is the Government or the County Council, or any other body that purchases from you, in the interests of the consumers they ought not to give you more than the undertaking is worth. That I think you will agree with?—Of course, we cannot expect to get more.

22,552. Not more than it is worth. If we pay you what it is worth then we will get the article, and we will not be losers?—That would be so.

22,553. It is suggested by one or two of the members of the Commission that, giving what it was worth, we would have to discount future profits, and that, therefore, we would make no gain. Even if that is true, we make no loss, because we pay for the future profits; we make no loss if it is properly discounted?—That may be so.

22,554. Now, suppose there is a large expenditure of capital necessary for new works; if you remain in possession you would get the dividend on that; if we were the purchasers the public would get the benefit of that. Is not that so?—They would get any benefit that would accrue on the new works.

22,555. On new capital. The purchase, of course, is represented by the undertaking as it exists to-day. Suppose 18 millions or 20 millions has to be expended on the Welsh Scheme, and that ultimately becomes remunerative; if it is carried out by you, you would get the profits; if it is carried out by the public, the public would. Is not that so?—Naturally.

22,556. Of course, there is always an increment going on in London. London is always increasing, and so rates are always going up, are they not?—We have a continual addition every year in consequence of the increase in houses.

22,557. (*Mr. Pope.*) You mean the income, not the rates?—The income.

22,558. (*Mr. Balfour Browne.*) That is, there is an income in the rating area; there is an increase of rateable value in your area, and also the rateable value is revised every five years, which gives you an increment on your rates; that is so, is it not?—Yes.

22,559. Now there is a district, as we have already proved, containing 237,000 people, which is within your area, but which is supplied by the East London Company. Do you follow?—Yes.

22,560. Do you know that if you had carried out your obligations—at any rate, what we think are your obligations—and had supplied those last year in the drought, you could have given them the water, because you supplied it to the East London, and that the amount of money they would have paid to you would have been 11,912*l.* less than they paid to the East London, who did not give them the water?—The mains would not have allowed us; we could not have given them the water.

22,561. But if you had laid down your own mains; is it not the fact that your charges being lower than the East London, first you had the water to supply, and secondly, if you had supplied you would have been

charging these people 11,912*l.* less?—If the rates vary so, yes, but I am not aware of that.

(*Mr. H. W. Cripps.*) How do you get at the 11,000*l.*

22,562. (*Mr. Balfour Browne.*) I will show you. It is already in Mr. Gomme's evidence. We have taken the rateable value of various houses in this area, and applied the water rates of the New River Company in the one case, and the East London Company in the other. The East London charge on that area 51,787*l.* The New River could not have charged any more than 39,875*l.*, or a difference of 11,912*l.* (*To the Witness.*) Now tell me why you did not supply that district. Have you got any agreement with the East London?—We have not supplied that district, because our mains are not capable of supplying that part of it.

22,563. But have you got any agreement with the East London Company by which you abstain?—I think there was an agreement, but it was made so many years ago when the district was defined that I cannot remember.

22,564. If it still exists, I think it would be useful for the Commission to see it. Is it not the fact that at one time part of that area was absolutely supplied by your company?—It is so many years ago now that I cannot charge my memory with it. It was in the year 1815, that the New River and the East London Companies entered into a deed binding themselves under penalties to abstain from serving beyond the line drawn between them.

22,565. In 1815?—In 1815.

22,566. But you know that the whole thing was revised by Act of Parliament in 1852; and Parliament, after fixing your rates, still left that area within your supply, and also left it within the supply of the East London?—We still act under that agreement.

(*Mr. Balfour Browne.*) You still act under the agreement of 1815?

(*Mr. H. L. Cripps.*) I am not sure that the witness assents to that. It is a very important question. Does the witness assent to the fact that Parliament left this particular part to be supplied by both those companies, or by either?

(*Mr. Balfour Browne.*) There is no doubt about it, because it appears in both the Acts of Parliament.

(*Mr. Pope.*) Originally?

(*Mr. Balfour Browne.*) It appears in the Act of 1852.

(*Chairman.*) There is nothing about the districts in the Act of 1852.

(*Mr. Balfour Browne.*) Yes, indeed, there is. Each company's district is defined in 1852 in each Act.

(*Chairman.*) Is it?

(*Mr. Balfour Browne.*) Yes, and you will find that this district that I am speaking of is in the district of both companies.

(*Mr. Pope.*) I think you are wrong.

(*Chairman.*) Could you give us the section?

(*Mr. H. L. Cripps.*) Is that statement of yours assented to?

(*Mr. Balfour Browne.*) It is so, whether assented to or not. I will show you the Acts. We have gone over it, and you will find that in Mr. Gomme's evidence the various districts are mentioned—Aldgate, Christchurch, the City of London (part of), Hackney (part of), Norton Folgate, Shoreditch, and Whitechapel.

(*Mr. H. L. Cripps.*) That is copied from some schedule to the Act of Parliament.

(*Mr. Balfour Browne.*) It is taken out of the two different Acts.

(*Chairman.*) Is there a schedule of that sort in the Act of 1852. I thought the districts were settled long before that?

(*Mr. Balfour Browne.*) In each company's Act they were re-settled, my Lord, in 1852.

(*Major-General Scott.*) It was in that year, Mr. Balfour Browne, that the proviso was made that no company was obliged to supply any houses in a district which was supplied by another company.

(*Mr. Balfour Browne.*) And that showed that they must have overlapped, otherwise no such reservation would have been necessary. The Act said, "No company shall be bound to supply," but it left them free to supply if they chose.

(Major-General Scott.) Yes, it left them free.

(Mr. Balfour Browne.) That is our position with regard to competition.

(Witness.) The 34th section appears to be "Provided also that the company shall not be bound to furnish any such supply of water or lay down any pipe for such purpose in any part of the district which part is for the time being supplied with water by any other company."

(Mr. Balfour Browne.) Will you just note, my Lord, that the words are "shall not be bound to supply." That leaves them free to do so.

(Mr. Pember.) Yes.

22,567. (Mr. Balfour Browne to Witness.) Can you put that agreement of 1815 on the notes; can you give it to us?—Yes, it is a very long one.

(Mr. Pope.) You will find it has been already before Parliament. It is in the proceedings before the Committee of 1821, and it was then approved of.

(Mr. Balfour Browne.) I did not know that, but if so, there will be the less objection to my having a copy of it.

(Mr. Pope.) There can be no objection to that.

(Chairman.) What were the districts mentioned?

(Mr. Balfour Browne.) Aldgate, part of; Christchurch, Spitalfields, part of; City of London, part of; Hackney; Norton Folgate.

(The learned Counsel handed in the following Table.)

Part of the East London Company's district can be transferred to the New River Company as follows:—

Parish.	Population supplied by the East London Company which may be supplied by the New River Company.	Rateable Value supplied by the East London Company which may be supplied by the New River Company.	Charge on Rateable Value.		Reduction in charge if transferred to the New River Company.
			By the East London Company's Present Charge	By the New River Company.	
Aldgate (part)	1,692	£ 15,074	£ 754	£ 507	£ 247
Christchurch Spitalfields (part).	22,114	83,079	4,154	3,123	1,031
City of London (part).	214	7,863	393	295	98
Hackney (part).	155,146	638,888	31,944	24,993	6,951
Norton Folgate	1,483	10,970	548	424	124
Shoreditch (part).	23,786	105,578	5,279	4,007	1,272
Whitechapel (part).	32,596	174,301	8,715	6,526	2,189
	237,001	1,036,753	51,787	39,875	11,912

Equal to a reduction of about 23 per cent. In addition there would probably be a slight reduction in respect of charges for extras.

At Question 3411 Mr. Gomme put in a table showing that the above population could be transferred to the New River Company.

About 5,000 people in the East London Company's extra London district could also be transferred to the New River Company.

(Chairman.) Is there any map or anything which shows what area is alluded to.

(Mr. Pope.) There was on the walls, no doubt.

(Mr. Balfour Browne.) We have had one prepared that gives the places.

(Chairman.) I daresay it will be there, but I cannot for the moment find those names in section 5 of the Act of 1852.

(Mr. Balfour Browne.) I cannot direct your Lordship's attention to the section at this instant.

(Mr. Pember.) So far as I know there was no alteration of the districts at all in 1852.

(Mr. Balfour Browne.) They may not have been altered; they were defined.

(Mr. Pember.) That is to say they were re-stated.

(Chairman.) No, not quite, because the recital in the Act I have before me is, "Whereas the company now supply"—not have the right to supply but now actually supply—"with water the following places, be it enacted that the limits for the supply of the water shall be held to be the places so supplied by them as aforesaid"; and it goes on, "such other places, if any, as they are now authorised to supply with water."

(Mr. Pember.) I did not think there was any alteration of district. I felt sure there was not. In fact, there could not have been very well without taking away the rights of the company. Any alteration of district would have taken away from one company and have given to another, and the company's capital was raised upon the basis of their having a certain district.

(Witness.) I see the deed you referred to says: "The terms of this deed were submitted to the Select Committee of the House of Commons on Metropolitan Water, which sat in 1821, and are printed in the Appendix to their Report (Appendix C., page 202)."

(Mr. Balfour Browne.) There was some misapprehension about the public rights. I find at the end of the first day upon the Water Bills promoted by the London County Council, the chairman, Mr. Plunket said: "We cannot sit much longer to-day, and I think it would be more convenient if you were to open this new part of your case when we re-assemble to-morrow. I may say, for your convenience, that the Committee are of opinion that they would follow the first paragraph of Sir Matthew White Ridley's Report, and will proceed upon the assumption that in the opinion of Parliament it is desirable to establish a single public representative water authority for the metropolis, so that when you proceed with your speech to-morrow you may proceed upon that basis." I do not say that the companies assent.

(Mr. H. W. Cripps.) If you like to see what happened on the morrow, that is alluded to.

(Mr. Balfour Browne.) Yes, I understood that. Now there is only one more question I want to ask you. I find that if Mr. Smith's agreement had been entered into, the calculation to justify the price he gave you would have brought your income in 1893 to 364,782l., and that, as a fact, your income fell short of that to the extent of 118,986l. So that if you had been bought on income on Mr. Smith's terms, the body purchasing you would have paid 770,657l. too much, as judged by the income of 1881-93?

(Mr. Pope.) Do you expect Mr. Bowles to work that out in his mind?

(Witness.) That was in 1893, and there were some exceptional circumstances, I have no doubt.

(Mr. H. W. Cripps.) It is, no doubt, a difficult calculation. I think you may take it, in a general way, that as things have turned out it would not have been a good bargain.

22,568. (Mr. Balfour Browne.) That is all. In fact, I rely upon Sir William Harcourt's Committee for that. (To the Witness.) Is it not the fact that you claimed to have 15,000,000l. back dividends?

(Mr. Pember.) No.

(Witness.) I cannot say.

(Mr. Littler.) No.

22,569. (Chairman.) Did you claim any back dividends?—Not in Mr. Smith's agreement, as far as I know.

22,570. But do you now claim anything for back dividends?—We are unlimited in our dividend, therefore we do not claim back dividends. We do not want to have it both ways.

(Mr. Littler.) We cannot claim for what there is no limit.

(Chairman.) Of course not.

(Mr. Balfour Browne.) It is a fact that they did claim it, as you know, my Lord.

(Chairman.) I have that present to my mind.

The witness withdrew.

[Adjourned till to-morrow at 12 o'clock.]

Mr. H. C.
B. Bowles.
23 Jan. '99

Recalled,
Q. 22,571.

FORTY-SIXTH DAY.

Tuesday, January 24th, 1899.

Guildhall, Westminster, S.W.

PRESENT :

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
Sir JOHN EDWARD DORINGTON, Bart., M.P.
ALFRED DE BOCK PORTER, Esq., O.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
HENRY WILLIAM ORIPPS, Esq., Q.C.
ROBERT LEWIS, Esq.

OECIL OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.
Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. H. C.
B. Bowles.

24 Jan. '99

Mr. HENRY CARINGTON BOWLES BOWLES recalled.

Cross-examined by LORD ROBERT OECIL.

22,571. There are a few questions I wish to ask you about the history of your company. Originally the New River Company supplied from the Chadwell and Amwell Springs, did not they; they were the original sources of supply?—Some 300 years ago that was the supply.

22,572. And then in process of time you took a supply from the River Lea itself?—That followed on, yes.

22,573. You took that supply from the river itself. Now, can you tell me, or if you cannot give me the information yourself immediately, your officials no doubt can—when that was?—I cannot give you the exact date.

22,574. Your officials no doubt can tell us?—They will be able to tell you I have no doubt.

22,575. And you will see that that information is conveyed to us?—Yes.

(Mr. Pember.) What did you ask?

22,576. (Lord Robert Cecil.) When the New River Company first began to take water from the River Lea as apart from the Chadwell and Amwell springs. (To the witness.) Now just let me refer you for a moment on the question of control, to paragraph 180 of the Report of Lord Balfour's Commission, the last paragraph of that section. "We think it "of very great importance that distinct obligations should be laid upon any company or local "authority which is allowed to pump water from "the Chalk for purposes of public supply, to keep "accurate observation of the effect of their operations "on the level of the water in the wells from which "they pump, and return the results to the water "examiner under such regulations as may be framed. "The great difficulty which we have had to encounter "has been in getting accurate and reliable information "as to the actual effect of the operations now carried "on. The importance of procuring this will increase "each year as the limit of what can be taken from any "district with safety is gradually being reached." You remember that paragraph?—Yes.

22,577. Do you see any objection in principle to some such control being exercised over your Company?—We take the soundings of our wells for ourselves, and I do

not see that there would be any advantage to let the public know.

22,578. Let me understand that. Is it your opinion, that that paragraph is wrong—that the public have no interest in knowing what the height of your wells is?—I hold this was a suggestion made by the Commission, and if it had been thought proper, I have no doubt Parliament would have brought in some Act of Parliament to compel it.

22,579. That is not what I asked you. I asked you what you thought?—I think that the public will not gain any information by knowing the ups and downs of our wells.

22,580. And you object to such control as that?—I do not see the necessity of it.

22,581. And you object to it?—If Parliament, of course, placed it upon us, we could not object to it.

22,582. What reason is there why you object to it? What is your reluctance to allow other people to know the effect of your pumping upon the water in the Chalk?—They might be misled by the calculations in some way, unless they understood it thoroughly.

22,583. How would they be misled? What are you afraid of?—We are not afraid of the result, but still I always think that these things are much better in the hands of the experts of the Company, than made public.

22,584. (Mr. Mellor.) Yes, but that is hardly the question that is put to you. What is the reason you think there ought to be any secrecy about such a thing?—I do not say anything about secrecy. I think as long as it is a company that is carrying on its business, it is much better for these facts to be only in the company's hands, than that they should be made public.

22,585. Surely you do not think that is a matter in which the public have no interest?—As long as they are supplied with sufficient water.

(Chairman.) Yes; but the owners of wells have got something to say to it.

22,586-7. (Lord Robert Cecil.) I was about to put that to Mr. Bowles. The county of Hertfordshire has an interest in this matter apart from the supply of water altogether to London. Can you give me any reason why the county of Hertfordshire should not be supplied

with information as to the effect produced by your pumping?—No further reason than I have already stated, that I think it is very much better for the company to manage their own affairs, and to know their own resources.

(*Lord Robert Cecil.*) You see it is not only their own affairs, they are affecting the interests of other people besides themselves. Now, why should not the county of Hertfordshire know about it—I merely take them as an illustration—know about the effect of your pumping?

(*Mr. Pember.*) Any private person who had a well would be in the same position.

22,588. (*Lord Robert Cecil.*) Forgive me, Mr. Pember. Now, Mr. Bowles, what is your objection?—I have already stated it, and I cannot say anything more. That is my opinion.

22,589. What is your objection?—In what way could it injure the Company?—I do not know that it would be any injury to the Company, but it might create some feeling.

22,590. It is only the facts that we want. Let me call your attention to a specific instance of the kind of thing we wanted to know. Do you remember that an application was made to you in the autumn of this year to have a gauge fixed in the Chadwell spring to see the effect of drought and the way the water returned after the drought into the Chadwell spring, so as to be able to test it by other wells in the neighbourhood. Do you remember that application being made?—Yes, certainly.

22,591. That application was first made to your engineer?—That is just a case in point that we thought that if it was given it would mislead the public very much. At that time the water was not coming from the spring, but it was only in consequence of there being no rainfall.

22,592. How could it mislead the public to have a gauge fixed—and that was all you were asked—to fix a gauge for yourselves—to have a gauge fixed in the Chadwell spring so that the rate at which the water returned, and so on, could be checked as against other wells in the neighbourhood?—I do not think it would have answered at all satisfactorily.

22,593. But what is your objection to it?—Because of its misleading the public.

22,594. In what way could it mislead the public?—Because they would not have been able to understand it.

22,595. What would they have misunderstood? What is the misunderstanding you are afraid of?—I do not think it would have allowed them to know the nature of the well.

22,596. They would have known the fact that it rose so much, and they then could have compared it with other wells, and then they could have seen, when you have pumped it down so much, it had such an effect on other wells, and so on?—We consulted our Engineers upon the subject, and they thought it would be very misleading, and that was the reason we came to that conclusion.

22,597. Misleading; but give me any reason why it should be misleading?—The Engineer would be able to give you that.

22,598. (*Mr. Mellor.*) Surely you could be guarded against the public being misled by giving your own explanation of the matter?—There happened to be no water coming forward from the well at that time, and the Chadwell spring happened to be under repairs.

22,599. You might have said so, at all events; I do not quite see your objection now. I am trying to follow as well as I can, but I do not quite understand your objection?—There were repairs going on at the well at the time, and it was impossible then to judge of the quantity of water that was coming up.

22,600. You do not suggest that yours is a private company surely?—Well—

22,601. It is a public company, is it not?—I do not know the difference between a private company and a public company in that sense.

22,602. I understand your answer to Lord Balfour's Commission was this, that it was no business, really, of anybody else, but your own business?—What I said

was, I think, it would be misleading to them to have judged in any way as to the nature of the spring at that time.

22,603. Do you suggest that the public are not entitled to know everything connected with these springs?—I have my doubt whether they ought to know.

22,604. I really only want to know what your view is?—That is my view, that as a company we ought to know our own business.

(*Lord Robert Cecil.*) I trust the Commission quite understand we do not want to lead them into a trap, We only want to know.

(*Chairman.*) Your questions are perfectly fair, Lord Robert.

22,605. (*Lord Robert Cecil.*) I think it has been said in this Commission, but I should like to know whether it is so or not, that there has been no express direct authority given to your Company to sink any of the wells that have been sunk—I mean to say they simply bought land and sunk the wells as private owners?—It was done under our Charter.

22,606. Under the general power to sink wells?—Yes, general power.

22,607. No specific power to sink wells?—Except that Parliament has known we have gone to them for money for the sinking of wells.

22,608. Is that so? How many of those wells were sunk out of capital?—I believe most of the wells; all of the wells were sunk out of capital.

22,609. Have you ever been to Parliament with plans and sections and said, "we propose to sink wells"?—

(*Mr. Pope.*) No, no.

22,610. (*Lord Robert Cecil.*)—"and we propose to allot capital for that purpose," so that landowners in the county have a chance of knowing what you are doing?—That would be some years ago.

22,611. I do not care when it was. I only want to know the fact?—I do not recollect the Acts of Parliament.

22,612. I understand Mr. Pope to say it is not so, and I am quite satisfied with that.

(*Mr. Pope.*) Lord Robert, do you want more information about the use of the Lea than is given in the preamble of the Lea Navigation Improvement Act of 1850? There is a long statement in the preamble with a list of the Acts of Parliament which have led to the use of the Lea before that.

(*Lord Robert Cecil.*) All we want is the date when the Lea began to be used.

(*Mr. Pope.*) I am afraid we none of us know.

(*Witness.*) I am afraid we cannot give you the information.

(*Lord Robert Cecil.*) You must know when you first erected the works.

(*Mr. Pope.*) The first Act of Parliament which is mentioned is an Act of George II., and I cannot carry my memory back personally so far back as that.

(*Lord Robert Cecil.*) I do not suggest you can carry your memory back, Mr. Pope, but you must surely have some record of when you first made your works, which enabled you to take water from the Lea.

(*Mr. Pope.*) They were all burnt. We have not those records, because whatever they were, they were destroyed by the fire.

(*Lord Robert Cecil.*) I am quite satisfied with whatever statement Mr. Pope makes. If he tells me the information is not in the possession of the Company, I will take that.

(*Mr. Pope.*) I do not undertake to say that. But if it is not, it is because we have not got it, not because we are withholding it.

22,613. (*Chairman.*) Do you know anything about the Amwell spring at this moment?—Yes, I know the Amwell spring.

22,614. Have these recent rains caused that spring to run again?—I believe so.

22,615. If you do not know, I will not ask you?—The Engineer knows more about that point than I do.

The witness withdrew.

Mr.
J. Searle.

24 Jan. '99

Mr. JAMES SEARLE called and examined.

22,616. (*Chairman.*) You are the clerk, I believe, of the New River Company?—Yes.

22,617. Have you prepared the financial return which was asked for by the Commission?—Yes, the return is dated September, 1898.

22,618. Yes, it is a return of stocks and loans, with the interest on them, and so on; a return of gross and net profits; a return of interest without deducting income tax; a balance sheet at the close of the last financial year; a return of capital applied for during the present session of Parliament—that is the session of Parliament of 1898—a return of authorised capital not raised. A return of land and other property, real and personal, and a return of the highest and lowest prices of the complete Adventurers' and complete King's shares?—Yes.

22,619. Will you put that in then, and it will shorten your evidence very much?—Yes, my Lord.

(*The Witness handed in Return. See Appendix U, 1.*)

22,620. Now, take the balance sheet, and I will ask you a few questions upon that. The thing that rather puzzles me among the items of assets in the balance sheet is capital expended, 3,713,482*l.* odd?—Yes.

22,621. Now, that represents, I suppose, the capital expenditure prior to 1852, the new shares and the three classes of debenture stock?—That is so.

22,622. I do not suppose the amounts tally exactly?—It is the whole of the capital expended from all those sources.

22,623. Then, turning to your return of land and other property, you state there that the Clerkenwell estate was acquired in 1745, but had been occupied by the Company for many years prior to that date, and that it is subject to a perpetual rentcharge of 362*l.* a year?—Yes.

22,624. We heard yesterday it was a rentcharge of 500*l.* a year?—That was quite another thing. The 500*l.* a year is what is called a King's clog; that is a charge upon the King's shares deducted from the profits of the King's moiety. That has nothing whatever to do with this. This is an estate which the Company bought in consideration of a perpetual rentcharge of 362*l.*

22,625. Where does the King's clog appear in your accounts? I do not see it anywhere?—I do not think it would appear anywhere here, my Lord. It is a deduction made from the dividends as they are paid to the King's shareholders until 500*l.* has been made up; and that is handed over to the owner of the King's clog. It is a deduction really from the King's shareholders' profits.

22,626. So that it is really involved in the dividend and interest account in the balance sheet?—Yes.

22,627. Do you know where that 500*l.* a year goes to now?—There are two private gentlemen living in Norfolk who receive it.

22,628. (*Mr. De Bock Porter.*) Have you ever tried to buy it up?—No. The original arrangement—I have looked at the deed—was that the King transferred his moiety of the Company to Myddelton in consideration of a perpetual charge of 500*l.* a year. That was before any dividend had been paid whatever. The Company were assenting parties. The deed was under the Company's seal, and it was agreed under this deed that the 500*l.* rentcharge should remain in the Crown for ever. But it seems to have been sold. I imagine it was, but our early records have been consumed by fire, and for many years it was in the hands of a nobleman, and he sold it in comparatively modern times.

22,629. Would it not be wise for the Company to buy it at a reasonable price?—I suppose they might. But it would be very much the same thing. You would have to give the Consol price for it, or something of that kind.

22,630. (*Chairman.*) What is the total of the dividend paid upon the King's shares?—Precisely the same as the Adventurers'.

22,631. What is the Adventurers'?—2,760*l.* a year per share.

22,632. And there are 29 of those?—There are 36 Adventurers' and 36 King's. Mr. De Bock Porter, I did not quite understand your question at the moment, but

I may say it would be no advantage to the Company to buy up the King's clog. It is a clog upon an individual share.

22,633. (*Mr. De Bock Porter.*) It is in private hands, might it not be better to put it in the hands of the Company?—They would have to give consol price, it would be no advantage to them.

22,634. But still a charge of that kind is not a very desirable thing to have?—It only affects individual shareholders; it does not affect the Company *quid* company.

22,635. (*Chairman.*) I was going to ask you the amount of dividend going to the King's shareholders. The deduction is 500*l.* out of some 6,000*l.* or more?—It is a mere fraction.

(*Mr. Mellor.*) It is a charge upon the King's share.

(*Mr. Pember.*) I have heard the story—it was exactly what the witness describes and it appears that King Charles the First sold it to private individuals.

(*Chairman.*) During the civil war?

(*Mr. Pember.*) Just before the civil war, and it is interesting to know that the deed which conveyed it to the private individuals who bought it is signed by Lord Falkland and Mr. Hampden.

22,636. (*Chairman.*) Now to go back to your return of land and other property, is that rentcharge of 362*l.* a year included in the expenditure upon the property?—No, there is no item whatever in the capital account which represents this estate.

22,637. I want you to look at your Return "I," you have at the bottom there "Amount of expenditure" in respect of the Clerkenwell Estate in 1895, 1896, "1897." Does that include the rentcharge?—That expenditure comes out of the income of the estate.

22,638. (*Mr. De Bock Porter.*) That is over and above the rentcharge?—I am afraid I did not quite understand. You see Clause No. 6 is the amount of income derived; No. 7 is the expenditure on the estate, and what is left is the net amount which is divided between the shareholders.

22,639. (*Chairman.*) Do you include the rentcharge in the expenditure?—Certainly.

22,640. Then the expenditure upon that estate is a mere trifle?—A mere trifle. There are ground rents only—there is scarcely any expenditure upon it.

22,641. (*Mr. De Bock Porter.*) What is the average term of the outstanding leases?—From six or eight years up to 40.

22,642. They vary from six years to 40?—Yes.

22,643. Have you any idea of the net annual value of the property?—I have taken it out as a matter of curiosity. It is somewhere about 40,000*l.* a year, according to the parish valuation.

22,644. (*Chairman.*) Then they are rack rents?—Rack rents.

22,645. Then as I understand this Clerkenwell Estate is the only real estate that you put outside the company's assets as it were?—It is the only estate.

22,646. (*Mr. Lewis.*) Is the land at the River Head kept quite distinct from the Clerkenwell Estate?—You mean where the works are at the River Head?

22,647. Yes?—Quite distinct. The freehold of that land was bought, and it appears in the capital expenditure of 1852.

22,648. So that it belongs to the water undertaking?—Entirely, yes.

22,649. (*Chairman.*) Can you give us any idea of the present market price of Adventurers' shares, and of King's shares?—They are given in Return K.; the highest price realised in 1898 for an Adventurers' share was 125,352*l.* and in the same half year for a King's 115,500*l.*

22,650. (*Mr. De Bock Porter.*) Have not some recent transactions shewn a lower price than that. Some of the fractions that have recently been sold have not been sold at so high a rate as 115,500*l.* for a King's share?—No, I should think not. I have not worked it out. The fractions are a little erratic.

22,651. (*Chairman.*) What is the market price of that 500,000*l.* that you have got in new shares?—440 to 445.

They are quoted on the Stock Exchange. I have not looked very recently. I think that is about it.

22,652. (*Mr. Pope.*) 444 to 445. I looked the other day?—Yes. Then mine was a very good guess.

22,653. (*Mr. Mellor.*) What is the lowest price of Adventurers' shares that you have known within the last 10 years?—The lowest given in the Return is in the year 1883—about 10 years ago, 85,000*l.*

22,654. (*Mr. Pope.*) For an entire share?—An entire share.

22,655. (*Chairman.*) The price seems to have risen very much since 1895?—Yes.

22,656. (*Mr. Pope.*) What is the highest?—There was part of one sold, an Adventurers' share, at 128,500*l.*

22,657. (*Chairman.*) That does not appear here?—No, that was subsequent to this return being made up.

22,658. (*Mr. De Bock Porter.*) At the present prices they do not nearly pay 3 per cent.?*—No.*

22,659. (*Chairman.*) Now, have you a Return of the number of supplies, estimated population supplied, and the rateable value of the properties supplied by your Company?*—Yes.*

22,660. Kindly put in that return?*—Yes.*

(*The Witness handed in Return. See Appendix U, 2.*)

22,661. You have also a return of the distribution of your capital expenditure?*—Yes.*

22,662. Kindly put that in?*—Certainly.*

(*The Witness handed in Return. See Appendix U, 3.*)

22,662a. (*Mr. De Bock Porter.*) With reference to the stock issued the other day, some of it I see was issued at 102*l.* 5*s.*, was it not, and the other at 103*l.* 12*s.* 6*d.*?*—Are you speaking of the sale by auction?*

22,663. Yes, the sale by auction the other day?*—Yes.*

22,664. Was not that rather a low price?*—It was lower than the time before. About a year before we issued some by tender we got a better price.*

22,665. Was the limitation of repayment at the end of 25 years put in then?*—Distinctly.*

22,666. The sale?*—Certainly. It is an obligation by the Act that we are to announce upon every paper that we issue, that it is repayable at par at the option of the Company at the end of 25 years. That was known to those who paid the higher price by tender, as it was to those the other day who paid a lower price by auction.*

22,667. May I ask you a question with reference to the exceptional treatment you give to people in the City. Was there no understanding or undertaking between your Company and the Corporation, or anybody in the City, or was it a pure act of grace on the part of the Company, in not taking the full valuation?*—As far as I know, there was nothing whatever between the Company and the Corporation. It has really for many years—as long as I have been there, and I have been there 35 years—been almost a matter of bargain between the Company and the owners or occupiers of these valuable office properties.*

22,668. Then, prior to Torrens's Act, you had taken your own valuation only?*—Certainly.*

22,669. You had not gone to the ratebook at all?*—No, and always in the City we had taken a low amount as the annual value, and that was perpetuated after Torrens's Act passed, taking, of course, the rateable value on the same amount, and keeping well under it.*

22,670. At the present time, when properties change owners, do you make a new arrangement, or, if there is a rebuilding, do you allow the charge to go on?*—We allow it to go on. We never raise the question of revising the rate. Of course, if a man comes to us we go into it.*

29,671. (*Mr. Lewis.*) I should like to ask you one question in connexion with the Financial Return B. I suppose that dividend of 262,181*l.* is after deducting the 500*l.* a year in respect of the clog?*—No, this is a full dividend. As between the proprietor and the owners of the King's clog, the proprietor of the King's share has to submit to a deduction, which does not appear here. This is the full amount the Company are liable to pay as dividend. But upon the King's shares, there being this charge that is deducted from the individual proprietors, and handed to the owner of the clog*

But that does not at all affect the gross amount of dividend.

22,672. No, but it does affect the amount that is paid to the holders of the King's share?*—The amount that the King's shareholder receives is undoubtedly diminished to the extent of the contribution he makes to the clog.*

22,673. May I ask you whether we thoroughly understand the difference between the original and the new shares. I understand the new shares receive their full share of the dividend you declare?*—Yes.*

22,674. The King's share the same, less the 500*l.* a year?*—Minus the 500*l.* a year.*

22,675. And then the King's share has a vote for Hertfordshire?*—Yes.*

22,676. And the holders of 29 out of the 36 Adventurers' shares will, in addition to that, have the privilege of a seat at the board?*—Yes.*

22,677. And no more than 29?*—No more than 29.*

22,678. Therefore the value of an Adventurers' share in the future—that is if you have more than 29 shares—will be less than in the past, because it does not necessarily carry a seat on the Board?*—That happens to be the case now. We have 29, and there are others who are qualified to come on, but they must wait for a vacancy.*

22,679. (*Mr. H. W. Cripps.*) I asked a question yesterday as to which there was a trivial error in the answer, which you can perhaps correct. I asked what was the annual salary the directors received. I had reason to suppose it was 10,000*l.* a year, but a half-yearly return was handed to me which showed somewhat less, and I think Mr. Pember or someone said it would not come to that amount. But I have now got the other half-year, which is indeed the last half-year, and I find that instead of being less than 5,000*l.* in that half-year it was more than 5,000*l.* considerably—it was 5,200*l.* or something of that kind. So that it would be the fact, would it not, that you may say as a round figure that the directors cost 10,000*l.* a year?*—As a round figure, yes.*

22,680. There is one other question I should like to have answered upon that. How is that paid to the directors? Do they get a certain share of that every year whether they attend the meetings or not, or are those persons paid only who attend the meetings?*—Those are paid only who attend the meetings.*

22,681. And about what would be the average number that you get at a meeting?*—26 or 27.*

22,682. (*Chairman.*) Out of 29?*—Yes.*

22,683. (*Mr. H. W. Cripps.*) Then some way or another that 10,000*l.* would have to be divided by 26 or 27?*—Yes, that is so.*

22,684. (*Mr. De Bock Porter.*) With reference to what you were saying just now about the abatement that is made in the city, when Mr. Goldney was here he spoke about a Water Meter Bill which was promoted by the Corporation?*—Yes.*

22,685. Was there not some informal understanding that if this moderate charge only were made that Bill would be withdrawn, or would not be persevered with?*—Certainly not, the Bill was resisted by all the eight companies and after a very long debate in the House, and a very full house, it was rejected entirely upon the discussion that had taken place—there was no communication whatever between the Company and the City Corporation.*

22,686-9. (*Mr. Mellor.*) I should like to ask you this question: out of what fund does the fund for the opposition to Bills in Parliament come?*—They come out of the revenue of the Company.*

22,690-3. That is out of dividends?*—It goes in diminution of dividends, that is to say the profits of the half-year are to that extent less than they otherwise would be but for the money spent in opposition.*

22,694-7. That is to say, in that case the full dividend is not paid?*—All the profits that are available after meeting all the expenses would of course be divided. This would be regarded as an expense of the half-year.*

22,698-9. If the full dividend is paid, then the cost of fighting those Bills in Parliament comes out of the pockets of the ratepayers, is not that so?*—With regard to the New River Company there is no limit of profit.*

(*Mr. Mellor.*) Yes, I was wrong, I had forgotten that.

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(Mr. Pope.) The whole of the profits are divided, and of course they are diminished by whatever the expenses are.

22,700. (Mr. Lewis.) I suppose the expenses in connexion with your own Bills promoted in Parliament and passed go to capital?—Yes, if it is for extension of works, certainly. Oppositions are of course always paid for out of revenue.

Cross-examined by Mr. FREEMAN.

22,701. Will you just look at the balance sheet which is F. in your Financial Return. I see under liabilities the capital expenditure prior to 1852 was upwards of 1,519,958*l.*?—Yes.

22,702. Can you tell me, as a matter of fact, did that or did it not include any moneys paid for the landed estate other than the Water Company estate?—I think I have already said the only estate we have independent of the water business is the Clerkenwell estate, for which no capital sum was paid.

22,703. Did that figure include any capital expended upon any land estate. I just want to know that fact?

(Mr. Pope.) I cannot answer that question without reference, but you will find what it did include in the Report of the Committee of 1852.

(Mr. Freeman.) Surely I can ask the witness the question, and if he does not know it, he will say so.

(Witness.) I am afraid I do not know what you mean by landed estate.

22,704. You know you have two estates; there is what you call the landed estate and the Water Company estate?—The water undertaking is one thing and that is represented by the 1,519,000*l.* Apart from that the company possess nothing except this Clerkenwell estate, for which no capital money was paid.

22,705. That is an answer to what I want. Now as regards the next matter. You told his Lordship that there were certain exceptional privileges which you gave to banks and places of that sort in the City. Have you any similar arrangement with any similar offices outside the City?—Yes, certainly. I do not think I mentioned banks.

22,706. Well buildings?—There is no doubt, in all places in which property has an exceptional value for business occupation, the Company never have charged the full amount and do not wish to.

22,707. Then it is nothing exceptional inside the City?—No, except that you see it there in a more concentrated form.

22,708. Simply because there happened to be more in the City?—It is just the same in Clerkenwell and Shoreditch, where they have furniture factories and places of that kind.

22,709. So that if you had two banks, one on one side of Temple Bar and one on the other, you would treat them the same?—Yes.

22,710. What is the system you go upon?—It is really a matter of bargain with each consumer.

22,711. There is no general rule laid down?—No, there is not.

22,712. You do not take off any percentage or anything of that sort?—No.

22,713. Can you give me one other figure, what is the percentage on your general income, which is due to trade supplies by meter?—The meters yield 120,000*l.* odd a year. It would be nearly as possible 125,000*l.* In addition to that there would be a number of agreed amounts paid which are not metered, but yet the water is used for non-domestic use.

22,714. Can you give me at all what that figure would be?—As nearly as possible, I should think, 30,000*l.* to 40,000*l.* a year.

22,715. Somewhere about 160,000*l.*?—Yes.

See 22,864. 22,716. Now there is only one other matter I want to ask you about. We were told yesterday you know that there was an agreement between your Company and the East London Company in the year 1815. Have you got that agreement?—Yes, at least the substance of it here. It was handed in to the Committee in 1821, and printed in their proceedings.

(Mr. Pember.) If you refer to the report of 1821, you will find it in the Appendix.

22,717. (Mr. Freeman.) Have you not got the actual agreement?—I have not got the actual agreement. It was an extremely voluminous one.

22,718. What you are referring to now is only an analysis of it, not the whole thing. It is a very long analysis.

22,719. An analysis may be long, but the document may be longer?—This is four pages.

22,720. Could you produce the actual document itself, or a copy of it: I do not want the original?—We have not got a copy of it. It is very long indeed, and I have always referred to this as containing the substance of it.

22,721. If you know the original yourself and you say that contains the substance of it, that will do for me if you tell me that?—Yes, it is really so.

(Mr. Freeman.) May that go on the notes?

(Chairman.) If you wish it.

(The Witness handed in Substance of Agreement. See Appendix U, 4.)

22,722. (Mr. Freeman.) Is there a similar agreement between yourselves and the Chelsea Company?—No, there is no agreement between us and any other company.

22,723. I see under the third head of the Return showing the number of supplies and estimated population supplied by the Company, which you have handed in, it says: "As regards the other companies " with which the New River are in contact, namely, " the West Middlesex, the Grand Junction, and the " Chelsea, no formal agreement has been entered " into, but an understanding was arrived at in " 1817-18, by which each Company confined its supply " operations to a certain district, and an exchange of " pipes took place to give effect to the arrangement," and lower down it says, "The history of this arrangement is also set out in the report of the Select " Committee above mentioned." Will you kindly tell me what you mean by the word "arrangement" there? Was it an arrangement in writing?—No.

22,724. Is there any minute showing it?—No, except the Company sent deputations, I believe, to different Boards, and it was agreed that they should limit themselves to a certain district; and their engineers met on the ground and parcelled out certain streets, measured up the pipes, and effected an arrangement on that basis.

22,725. As that was some time before you had anything to do with the Company, may I ask how you know it?—By the Parliamentary evidence of 1821.

22,726. Then there is no written document of any sort or kind, even a minute, referring to this?—There is a minute of the result of the measurements, and the number of pipes to be given up and taken over, and so on.

22,727. Does the minute also say that it was arranged that they should not go into each other's territory?—No. In fact the report of 1821, I think, contains the whole history—that is where I got my information from. May I read it?

22,728. I only just want to take the fact. I do not want to spend time over it?—It is said the companies could not enter into a binding agreement to that effect as regards West Middlesex.

22,729. (Chairman.) Why not?—I will read a short passage. This is from the report of the Committee of 1821. They deal with the question of competition:—

" This arrangement was effected between the New River and East London Companies, about the end of 1815; and between the New River, Chelsea, West Middlesex, and Grand Junction at the end of 1817. In the former case a deed was entered into by the two companies, binding them by penalties to abstain from serving beyond the line drawn between them. In the latter the four companies entered into no engagement to that effect, but left it to the prudence of each whether they would at any future time embark at the expense of fresh capital in a renewal of the contest. This difference of proceeding appears to have been occasioned by the wording of the West Middlesex and Grand Junction Acts, which rendered it doubtful whether those companies could bind themselves by engagement with any others to abstain from serving within certain limits."

22,730. (*Mr. Freeman.*) That speaks for itself, and beyond that there is no record of anything that you know?—No.

22,731. You have no map showing it?—No.

22,732. (*Chairman.*) You say that you do grant indulgence to a certain class of properties, both in and out of the City of London?—Yes.

22,733. That system has continued, I understand, for a number of years?—I should think ever since 1852.

22,734. Practically, would the Company find it, so to speak, impossible to alter that system and demand their full charges?—Of course it would provoke a great deal of opposition and angry feeling. People naturally look at it that they are paying—

22,735. It would arouse so much opposition and angry feeling that the Company, practically, could not charge their whole statutory rate?—I think they could if they thought it worth while to face it.

22,736. (*Mr. Mellor.*) Has any complaint been made that this is in the nature of an undue preference?—No.

22,737. (*Mr. De Bock Porter.*) Does any other company that you know of do the same thing?—I think some of them do; but, perhaps, you had better ask at first hand. I think they do.

22,738. (*Chairman.*) I may as well put the idea which is in my mind to you plainly. Do you look upon this reserve statutory power as an asset of the Company?—Yes, I think so.

22,739. Which you would use before an arbitrator?—Certainly, I imagine so.

22,740. Although the feeling against it would be so strong, that, for the sake of your own shareholders, you have never charged it since 1852?—I do not think they have quite regarded it in that light. You see people pay very high rents for business purposes, and so on. They come, and they very reasonably urge, "My use of water is not very great," and that kind of thing; "Cannot you make me some concession?" It was done, I believe, since the Act of 1852 was passed, and it has been acted on ever since.

22,741. (*Mr. De Bock Porter.*) It shows that annual value is not a very desirable measure in some cases?—On which side?

22,742. (*Chairman.*) Can you give us any figures showing any increase in the rateable value of City properties, we will say, since 1852?—I have not got them out, my Lord. Of course they are in print in various parochial returns, and so on.

22,743. You cannot give us any idea of the percentage of increase which there has been?—Off-hand, I cannot. The City has been rebuilt, and it is inhabited every day by 300,000 or 400,000 people. It is densely populated for at least 10 hours out of the 24.

The witness withdrew.

Mr. JOSEPH FRANCIS called and examined.

22,756. (*Chairman.*) You are engineer to the New River Company?—I am.

22,757. And, of course, a Member of the Institution of Civil Engineers?—Yes.

22,758. You informed Lord Balfour's Commission that 34 million gallons a day were derivable from the Chadwell Spring and your existing wells?—Yes. I stated in evidence before the Royal Commission in 1892, I may remind your Lordship, that—

22,759. Did you state what I have just put to you?—Yes.

22,760. Had you available pumping machinery at that time to get 34 million gallons a day?—Yes, we had.

22,761. You had?—Yes.

22,762. With a working capacity, do you mean, of that amount?—Yes.

22,763. Does that assume that the engines are working night and day at their full power?—That is so.

22,764. But that is not practically possible, is it?—At that time we did not require to work all of them night and day.

22,744. When premises are rebuilt do you alter your rating?—Yes, certainly. The charge always comes to be an agreed charge with the owner.

22,745. That agreed charge being considerably below the full rateable value?—Yes, certainly.

22,746. (*Mr. De Bock Porter.*) Do you acquiesce in its being roughly two-thirds of the value?—Yes, that would be about it.

22,747. (*Mr. Lewis.*) I suppose you have made no calculations of what your additional income would be from rates in the event of your charging full statutory rates?—It would be a very substantial increase.

22,748. (*Chairman.*) An increase of one-third, as I understand?—One-third upon these properties that got the benefit of the decrease.

22,749. Were you clerk to the New River Company at the time of the agreement with Mr. Smith?—No, immediately afterwards.

22,750. Can you explain the claim, as I call it for want of a better word, of 15,000,000*l.* for back dividends that was put forward by the New River Company on that occasion?—As far as I know no such claim was ever put forward, and I think that is explained by Mr. Smith's evidence. It is a long time since I referred to it; but I remember reading that he stated that he bought the New River Company on the basis of the market value of the shares.

22,751. But he put down a sum of 15,000,000*l.* for back dividends?—Later on in the inquiry he seems to have spoken of 15,000,000*l.*, but he said, I think, in his evidence, the Company claimed to have an unlimited dividend, and he had taken the advice of Mr. Thring and Sir Theodore Martin and various other authorities, and he dealt with them on the basis of the market value of the shares plus compulsory sale, and I think Sir William Harcourt, Chairman of the Committee, said it was a very reasonable basis to go on.

22,752. (*Mr. Lewis.*) Was it not upon the assumption that there was a maximum dividend of the New River Company, and if the dividend then paid was the maximum dividend, then the New River Company could claim for back dividends, this amount?—Yes; but that would be upon the assumption that there was a limit. The case of the Company was that there was no limit.

22,753. (*Mr. De Bock Porter.*) The New River supply about one-fifth of the whole of London, do they not, roughly?—Do you mean inside London and out or inside London alone.

22,754. Inside the water area. Roughly, it is one-fifth?—Yes it is.

22,755. To the extent of that one-fifth, in view of the dividends of the Company being unlimited, there is no possibility of the consumer getting any abatement whatever, assuming the *status quo* to be maintained?—Yes.

22,765. You see, I did not ask you that. Is it practically possible to work engines night and day at their full working power?—No, it is not.

22,766. Very well, then, you could not have pumped 34 million gallons a day from the Chadwell Spring and your wells?—The water was there—the water was available.

22,767. Yes, the water was in the bowels of the earth, but you had not the pumping power to enable you to supply that quantity day by day?—No, we stated to Lord Balfour that that quantity of water was available, using the word "available" in exactly the same sense that Sir Alexander Binnie has used it in his reports on the Welsh Scheme, and Sir Benjamin Baker and Mr. Deacon in their reports. It was available, and as time went on and we found the necessity for pumping day and night, our intention was to duplicate our machinery, so that we could always get the whole of that available water when necessary.

22,768. How much must you strike off from the 34 million gallons a day for ordinary stoppages and casualties to wells and machinery?—10 million gallons a day would be a fair allowance.

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J. Searle.

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Mr. J.
Francis.

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22,769. So that only 24 million gallons a day were available for the consumer?—There was as much available for the consumer as he wanted then.

22,770. Yes?—The consumer did not want more than 24 millions, so we had not provided more.

22,771. That was not the question in the least. The fact was that there were only available for the consumer, with the existing pumping machinery, 24 million gallons a day, and not 34 millions?—With the existing pumping machinery worked as it must of necessity be, allowing for stoppages and casualties, there were 24 million gallons available. That there were 34 million gallons was a fact; that being the quantity that was really obtainable, the 24 million gallons mentioned at another time was an estimate of what could be obtained from the machinery then existing before other machinery was provided.

22,772. When was it that you improved your machinery and your appliances?—We are improving them still.

22,773. When was it, after Lord Balfour's Commission, that you first began to improve them? When was your application to Parliament?—Our application to Parliament? We have been improving it continually since 1892.

22,774. If you would answer a very plain question, we should get on very much quicker. Did you apply to Parliament in 1896?—In 1896 we promoted two Bills in Parliament. In one we sought powers jointly with the Grand Junction and West Middlesex Companies to impound Thames water. That was the Bill which became the Staines Reservoirs Act of 1896.

22,775. What other application did you make in 1896?—We also made an application for capital to provide for the ordinary extension of supply, and for the formation of new wells in the chalk.

22,776. Why should you apply for new wells in the chalk when you have got this margin of 10 million gallons a day which extra pumps could have got out of your existing wells?—In that Bill application was made for money to provide the duplicate machinery.

22,777. In the existing wells?—Yes.

22,778. As well as power to sink new wells?—Yes. When we promoted the two Bills, we were desirous of having both the Staines Reservoirs Act and our Bill for constructing new wells, but in consequence of an instruction given by the House of Commons to that Committee, the Committee were unable to grant us both.

22,779. And which did you drop?—The preamble of the Staines Reservoirs Bill having been practically passed by the Committee, we dropped a portion of the other.

22,780. So much as related to new wells?—That is so.

22,781. Did you keep the part that related to additional machinery for your existing wells?—Yes.

22,782. Has that additional machinery now been put up?—Some of it.

22,783. What amount from the wells that existed in 1892 can you now get up and deliver to the consumer?—I do not mean the amount that is hidden in the bowels of the earth, but the amount that is available in the sense of being available to the consumer?—We could get about 30 million gallons.

22,784. Thirty millions?—Hardly so much—about 28 to 30 million gallons a day.

22,785. Are you getting that at the present moment?—No, we do not need it; the consumers do not require it.

22,786. Did I ask you whether you need it? I asked you whether you were getting it?—Not at the present moment; in the summer we were.

22,787. What is the largest amount per day that you got last summer from the wells existing in 1892?—29 million gallons in a day.

22,788. And for how many days did you do that?—The maximum lasted but a very few days; it was a little less shortly afterwards.

22,789. (Mr. Mellor.) Was that pumping night and day?—Yes.

22,790. (Chairman.) There is another matter upon which your estimates in 1892 and 1896 are not quite

in accord. You presented to Lord Balfour's Commission a forecast of the requirements of your district, did you not?—Yes. I should like to point out that when Lord Balfour's Commission first met and asked for forecasts of the requirements of the distant future, the problem that was presented to the company was a perfectly novel one. Hitherto they had found it quite sufficient for all practical purposes to have in hand such works as were necessary to provide for 10 or 15 years ahead, but they had not studied the various causes that might operate to determine the growth of London during 40 years, and, in fact, it is not at all likely that anyone else had given consideration to the question until then.

22,791. Very well, admitting all your difficulties, the estimate that you did lay before Lord Balfour's Commission was a probable average yearly addition of 66,568 new supplies?—Yes, that was the basis we took then for calculating what might be wanted in the future.

22,792. That represents 14½ million gallons a day?—Yes.

22,793. And raises the probable average daily consumption at the end of the 40 years to a total of 47½ million gallons?—Yes, that was what we said then.

22,794. Did you give a different forecast in 1896?—Yes, we did; just before the appointment of the Committee there had been a very great frost, and the consumption during that time had reached a very high point. That had impressed upon us the necessity of adopting a higher estimate of the future consumption than had been thought necessary in 1892.

22,795. What estimate did you adopt in 1896?—In 1896, the figure I gave, I think, was that in the year 1937 we should want 66 millions. I have not a reference to exactly what I said, but it was about 66 millions; it was a considerable increase upon the figure that we gave in 1892.

(Mr. Freeman.) I think I can give you the figure; it was 77,921,000.

(Witness.) Can you give me the reference to it?

(Mr. Freeman.) It is page 102 of the proceedings before Sir Joseph Pease's Committee of 1896.

(Witness.) I did not put that in; I am not responsible for that table. I think another witness put that in; mine was lower than that.

(Mr. Freeman.) I thought that was the figure you put in. That was given in the table showing the requirements of all the companies.

(Witness.) I have it now. It is: "In 20 years we should require 63 million gallons per day as the average daily supply throughout the year." It is on page 180.

22,796. (Chairman.) That is not the figure we have had laid before us. We have had laid before us that, before the House of Commons, in 1896, you estimated the daily average quantity required in 1915 at 77,921,000 gallons?—Another witness gave that.

(Mr. Freeman.) That is the figure, my Lord, I just put to him; it was the figure in a table handed in to the Committee by Mr. Pember on behalf of the New River Company. Mr. Francis is correct in saying it is not his own actual table; but it represented what the requirements of the New River Company were estimated to be.

22,797. (Chairman to Witness.) How did that difference arise; did it arise from your taking a larger daily supply per head, or a larger population, or what?—From both. We felt bound, after we had received the report of Lord Balfour's Commission, to follow their ruling, and to adopt the figures for the increase of population that had been adopted there, and also the number of gallons per head that they had proposed to adopt.

22,798. Then the estimate of annual or decennial increase of population—my memory will not carry the figure—?—There was a certain percentage of increase that was worked upon by Lord Balfour's Commission. In the report it was worked out upon the increase in the district between 1881 and 1891, and that gave a certain percentage. We found out what that percentage was for our own district, and adopted that for the increase of population.

22,799. How many gallons per head did you take?—35.

22,800. Was that estimate of your requirements on that date, in your present judgment, correct or incorrect?—I think it is a quantity that we should be prepared to provide. After the indication we had from the former Commission, I think we should be wanting if we did not provide that quantity, or see our way to provide it when wanted.

22,801. In your opinion, is that quantity sufficient, or too great, or too small?—One can hardly think that it will rise to that in the time, but really one hesitates rather to make these forecasts. The more information we get, the less inclined we feel to make them.

22,802. You have had now the experience of eight years since Lord Balfour's Commission?—Yes.

22,803. Has the population grown at the rate you assumed in your district?—No, it has not.

22,804. How much below is it? What is the rate of increase?—I can hardly put the rate of increase into figures, but it certainly is below; I know, as I have checked it. I think we certainly must take a higher figure than we did in 1892. We were certainly too low then.

22,805. Too low in what respect?—The forecast we made in 1892 of the quantity of water we should want in the future was too low.

22,806. Was it too low because you under-estimated the population, or because you did not allow enough per head?—We did not get at it in that way. We had taken, you see, the increase in the number of supplies, and we had increased the water in proportion to the number of supplies. We had imagined that the increase in the number of supplies would have gone on at the same rate as it had for a certain number of years beforehand, and then we had increased the water in proportion.

22,807. Have you found that the number of supplies has increased beyond your forecast?—No, I think the number of supplies is pretty much the same, but the quantity of water used has certainly increased.

22,808. The quantity per head do you mean?—Yes, especially at times of maximum consumption, in frost and in drought.

(*Mr. Freeman.*) Would your Lordship allow me to point out—I have looked at Mr. Francis's evidence before Sir Joseph Pease's Committee—that, although the figure he has given is quite correct as to the daily supply during the year, he added that you must put 25 per cent. on to that to get the maximum week which brought it to 79 millions, which, you will see, is very near the figure given in the table.

(*Witness.*) That is the maximum quantity.

22,809. (*Mr. Freeman.*) For the week?—Yes.

22,810. (*Chairman.*) Are we to take as the accurate figures your figures of 1892, or your figures of 1896?—I think you should take the figures of 1896, as what we are prepared to provide when the necessity for it arises.

22,811. (*Mr. Pember.*) Of those figures, do you mean the 63 millions you gave or the 77 of the table?—The 63, with the 25 percentage addition.

(*Mr. Pope.*) The 63 had the word average added.

(*Witness.*) That 77 was shown on a different table altogether; the 79 was mine.

(*Mr. Pope.*) Based on a maximum.

(*Mr. Freeman.*) For a maximum week?

(*Mr. Pope.*) Yes.

(*Mr. Freeman.*) It is to be found at Question 2306, if you want the reference to it.

22,812. (*Chairman to Witness.*) Have you reached the average of 35 gallons per head in your district?—No, we have not, as an average over the year. Last year it was 31½ gallons per head per diem.

22,813. (*Mr. Pope.*) The average?—The average throughout the year.

22,814. Not the maximum?—No.

22,815. (*Chairman.*) What was your maximum?—I am afraid I have not worked out the maximum per head. I have the maximum quantities, but not the maximum per head.

(*Mr. Pember.*) If 20 per cent. is right, ought we not to add 20 per cent. to the 31.

22,816. (*Chairman.*) Will that be sufficient, to add 25 per cent. to the 31?—I think it would be too much this year.

(*Mr. Pember.*) I thought you said 20 per cent?

(*Chairman.*) Twenty-five per cent. he said.

(*Witness.*) I should think it is more likely it would be under 20 this year.

22,817. (*Chairman.*) But 25 is the figure you gave just now?—It is only at certain times, we have that maximum.

22,818. At those times, did you give the figure of 25 per cent.—I caught it so, but if I am wrong, correct me—I caught it that you gave an addition of 25 per cent. for the maximum supply?—That is the maximum maximum, but we did not have the maximum maximum this year; our maximum was only about 20 per cent. over the average. In some years it may rise as high as 25 per cent., but it did not this year.

22,819. (*Major-General Scott.*) Are you referring to a maximum average supply of a month or to a maximum average supply of a week?—A week.

22,820. Then for a week you mean that the highest was 25 per cent. in excess of the average?—It has been, but not during last year.

22,821. What was your highest week last year?—I think I may safely say 20 per cent. more than the average—somewhere about that.

22,822. (*Chairman.*) Twenty per cent. more than the 31½ gallons?—Yes.

22,823. That would bring it up to 38 very nearly, would it not?—38 nearly.

22,824. (*Major-General Scott.*) But only for a week?—Only for a week.

22,825. (*Chairman.*) We have understood, in regard to the daily rate of increase per annum, that after the lapse of a year in each year there was an increase in the daily rate of supply of a million gallons—is that correct or incorrect?—I made that statement in my former evidence, but I think it seems to have been, perhaps, misunderstood. I stated that the daily rate of increase was about a million gallons per day, with the intention of conveying that each year an additional million gallons, or thereabouts, was required to provide for the maximum demands that might arise; but from succeeding questions it appears to have been understood that the annual increase of a million gallons per day referred to the average daily supply throughout the year, instead of to the maximum requirements.

See 16,873.

22,826. Then what are we to understand now—that each year an addition of a million gallons a day is to be made to the maximum demand?—To the maximum.

22,827. What addition is to be made to the average daily demand?—It is under three-quarters of a million.

22,828. That is, that each year the increase of your district will demand an additional supply from you of three-quarters of a million gallons?—Yes.

22,829. Will that yearly increase of average daily supply be maintained or not, in your judgment?—It will be maintained, probably, in the immediate present, for a few years, but I think it will gradually become reduced afterwards in our case.

22,830. Why?—For one reason, because our district is limited. We are bounded on the south by the River Thames, on the east and west by the districts of other companies, and the area of supply can extend northward only. In that direction it can extend only as far as the southern boundary of Enfield parish. Beyond this, the parishes within the company's district are supplied either by a local authority or by a company. By assuming that the increase of population or the extension of supply will continue at the rates that have been given until the year 1937, all future requirements are taken into consideration, because all the district that can require a supply will be filled up.

22,830a. Then you mean that before 40 years have elapsed your district will be filling up, so that the rate of increase in the quantity of water required will be smaller?—Yes, and, in fact, our estimate provides for the filling up of the district, so that it is immaterial, so far as we are concerned, whether 40 years or a longer period is taken. We are prepared to deal with it, because we are prepared to deal with the whole district requiring supply.

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22,831. Will you put in a copy of your letters estimating the future growth of your capital expenditure?—Yes.

(The Witness handed in copy of letters. See Appendix U, 5.)

22,832. What is your forecast of the capital expenditure that will be required by you in order to meet your future requirements?—Apart from the capital of one million provided for the construction of works for establishing communication with the Staines Reservoirs Aqueduct, 10,000*l.* to 12,000*l.* per annum will be required for extension of mains to serve new houses, and 260,000*l.* will be required for augmentation of power and means of supply. That does not include any part of the capital that the Staines Reservoirs Joint Committee have authority to raise.

22,833. The million for the Staines Reservoirs Scheme is for your pipe that connects, is it not?—It is for the connexion between the Staines Reservoirs works and our own district.

22,834. What will your share of the other works of the Staines Reservoirs Scheme be?—We do not raise any capital for that.

(Mr. Pope.) The company are liable for a third. Whatever the expenditure is, we must pay a third of it.

(Chairman.) Therefore, you will have to find the capital.

(Mr. Pope.) Certainly, it will amount to about a million and a quarter more. There is a million and a quarter which will be involved in the Staines Reservoirs Scheme, a million in the utilisation of that for our own purposes by the conduit connecting it with our works, and the capital that the witness has just mentioned to you.

(Witness.) We pay interest on the capital, but we do not raise the capital—the Staines Reservoirs Committee do that.

(Mr. Pope.) That is a mere ministerial act of the Staines Reservoirs Committee in issuing the stock, but we pay the interest of our share of it.

(Chairman.) That is the interest upon the third of a million and a quarter?

(Mr. Pope.) Yes.

(Mr. Freeman.) Does the million and a quarter include the enlarged reservoir?

(Mr. Pope.) Yes, I think so.

22,835. (Chairman to Witness.) It is a million for your connecting conduit?—Yes.

22,836. And a third of a million and a quarter for your share of the charges?—Yes.

22,837. 260,000*l.* for augmentation of power and means of supply; and, say, 11,000*l.* per annum for extension of mains?—Yes.

22,838. Do you mean that the 11,000*l.* will go on for 40 years, say?—It will diminish towards the end, certainly; but for some years to come it is not likely to decrease.

22,839. Then that means about 440,000*l.* more?—Yes.

22,840. That forecast is based upon the assumption that the increase in population during the next 40 years will be that which Lord Balfour's Commission anticipated?—Yes: I have the figures. In the case of the New River Company, that would be at the rate of 1.0951 per cent. per annum, the rate of increase over the whole of London during the same period having been 1.68458 per cent. per annum, as stated in Lord Balfour's Report.

22,841. (Major-General Scott.) It is less than the average, then?—Yes, it is.

22,842. (Chairman.) You have separated the increase in your district from the increase over the whole of London?—Yes; some of the other companies' districts will increase at a much greater rate than ours.

22,843. (Major-General Scott.) Supposing they decline to take that estimate—supposing they decline to adopt your idea that they will increase at a greater rate than Lord Balfour's estimate—then the net result will be that the total population you will collectively estimate for will be less than Lord Balfour's estimate?—Yes; but I should imagine that some of the other companies, in working out their figure, would find a higher rate of increase than Lord Balfour gave for the whole.

22,844. But the other companies may not see it?—I think it is manifest, in some cases, that the increase is going on much more rapidly than in our district.

22,845. Have you come to any agreement as to the distribution of population, and as to the increase of population among the companies?—No. This relates entirely to our own district, without reference to any other.

22,846. Then it does not at all follow that when we have added up, when we get them, the collective estimates as to the increase of population in the eight companies' districts, that it will accord at all with Lord Balfour's Commission's estimate?—I should think it is extremely probable you would find it comes out much about the same thing.

22,847. Why? If each company is going on its own basis, there would be a very great chance against its coming out absolutely identical with the estimate of Lord Balfour's Commission?—But as it is evident to us that we are below the average, I think it would be evident to others that they are above it.

22,848. (Chairman.) As I understand, in your estimate, you have taken the principle—the *modus operandi* of Lord Balfour's Commission—that is, you have taken the increase in the decennial period from 1881 to 1891 in your own district?—That is so.

22,849. What difference would it make if you assumed that your population grew at the average rate; have you calculated that?—No. As far as we are concerned, it would not make any difference; it would simply mean that our district would be filled up a little sooner, and we should have to lay out all our capital in making provision for them a little earlier.

(Major-General Scott.) But the population might pack closer.

(Mr. Pember.) That is not the tendency.

(Witness.) I have not assumed any different method of living from what we have at present.

(Mr. Pember.) Besides, it is not the tendency; the tendency is to get more room.

22,850. (Chairman.) I am not quite sure that I have got the items accurately; can you give me the total capital expenditure covered by your forecast, including everything?—I can soon put it together.

(Mr. Pember.) I have added up all the items, and they come to 2,117,000*l.*, including Staines and everything.

(Chairman.) Including the third.

(Mr. Pember.) Yes, including the third of one million and a quarter.

(Witness.) I am in a difficulty to know whether to add in the Staines Reservoirs capital; am I to add that in or not?

(Mr. Hollams.) I think not.

(Witness.) I should say not.

(Chairman.) Surely it is a charge, although it is represented by annual interest.

(Mr. Littler.) It is a variable quantity, my Lord. It depends on the quantity of water that each company takes from Staines.

(Chairman.) As I understand, you have to pay interest whether you take the water or not.

(Mr. Littler.) No, the interest is paid in proportion to the quantity of water each company takes. If the New River Company only takes a quarter, it would only pay a quarter of the interest. If it takes more than its third, of course it would pay rather more, but it is not likely to take more than its third.

(Witness.) I make that 1,700,000*l.*

22,851. (Chairman.) 1,700,000*l.*, plus this variable charge in respect of the Staines Scheme?—Yes.

(Mr. Pember.) That is it.

22,852. (Chairman.) That, you think, will meet all your requirements up to what date?—Up to 1937.

22,853. And after that date, as I understand your evidence, you anticipate that your district will have filled up and there will be no increase?—I think there can be no doubt of that.

22,854. I do not know that I need go into the effects of the frost with you. I suppose frost has largely increased the daily demand upon you?—Very

greatly, indeed. It is only fair to have an opportunity of saying that in all cases the company's resources have been fully equal to the occasion, and that there has been no necessity for placing any restriction upon the quantity of water accessible to consumers, providing their own pipes were in a condition to transmit it.

22,855. What addition to your daily consumption was caused by frost in 1894-5, say?—For a period of three weeks in 1894, and ten weeks at the beginning of 1895, an average of five million gallons per day above the normal supply was furnished, and at times the additional consumption caused by frost has reached eight or ten million gallons a day, the cost of making these special provisions being very great. During one season an additional expenditure of 5,000*l.* was incurred solely by reason of the frost.

22,856. Now, with regard to your sources of supply, of course, we understand that you dispute the proposition that your pumping from wells depletes the neighbouring springs and streams?—We quite admit that we deplete any well or spring that is within the range of the cone of depression around each particular well; but outside that we maintain, quite confidently, that we do not affect the level of the water in the chalk.

22,857. You heard the questions that were put to the Governor of the company by Lord Robert Cecil about keeping a record of the effects of your pumping?—Yes.

22,858. Do you see any objection to that knowledge being communicated to the public?—I think it is extremely objectionable, for this reason, that whatever we may communicate, we cannot communicate all, and it is impossible to communicate all. For a person to know as much as we do, they must come and stay with us and work with us. They can only get a partial knowledge of what is going on, and from those facts, undoubted facts, that they may get hold of, they would draw wrong inferences—we do ourselves. From time to time we get facts, and we come to conclusions from them, but then in the course of our daily operations we find we have to modify those opinions. Now, an outsider has not that opportunity, and I think he would be misled.

22,859. But your returns would communicate, not only the first misleading observations, but the subsequent correcting observations?—But the observations that are of the most value, and guide us in our daily work, are often not possibly recorded at all. They are what we see and hear.

22,860. What is there that you see and hear, and cannot record?—The constant daily and hourly variations of the water in the wells.

22,861. Why should not all that be recorded?—It would be so voluminous that it would be valueless to anybody, unless it was their business to attend to it as it is ours.

22,862. I am bound to say you do not make that intelligible to me. I do not see why observations which convey a right conclusion to your mind should not convey the same conclusion to other minds?—They cannot possibly. They could not be cognisant of all the facts of the daily working at all of our wells, which might have a good deal of effect upon the conclusions to be drawn from the figures that could be given.

22,863. Supposing it is found, for instance, that the pumping at some particular well is always followed by the falling or the depletion of a general spring, what is there misleading about that?—That is a matter of public knowledge, and is well known at the present time. Any facts of that sort that are of any value to the outside public are known; there is no doubt about those facts. Everybody knows them.

22,864. There is no official record of them now; there is no authentic record of what is happening?—Except in the form of evidence that has been given before this and other Commissions.

22,865. Yes, but that comes only at chance intervals. What is wanted, you know, is a daily record?—I certainly think it would be very objectionable indeed. I think it would be very useless and misleading to anyone to have the information, unless he had all the information that we have, and, as I say, worked with us.

22,866. (*Major-General Scott.*) Do you not think it would be useful to record the rest-level of the water in the well for a series of years?—That is a very difficult thing, for last year we had no rest-levels.

22,867. Then you would have to miss that year, but still, you might record it next year?—Then I think I should explain that it is a very difficult thing to find the rest-level of a well—a very difficult thing indeed. The rest-level is not arrived at immediately after we stop the engine, and it is a very complicated matter to find out what is the rest-level.

22,868. You would have to find out how long the water rose in your well, and when the rising in the well came to a stop, you might assume that to be the rest-level, I suppose?—Yes, that would be so, but then the probability is in our case that before we have arrived at that we start again. That is a matter of fact—I am not putting suppositions cases, and I can assure you that it is a most difficult thing to find the rest-levels in our wells. It is valuable information when you have got it.

22,869. Of course, if you start pumping again before the water has obtained its rest-level, it would be a very difficult thing, but I do not suppose that would always happen. You sometimes have to repair the engines, have you not?—Yes, in some of our wells it takes a considerable time before the real rest-level is attained. Then we get to work again. If we were to publish the figures that we obtained in that way, I think they would be very misleading.

22,870. Why?—I do not think the public would be satisfied if we were to state the simple fact that we could not get the rest-level.

22,871. Assume that these returns were scrutinised by experts, would they lead to no conclusions?—An expert—

(*Mr. Pember.*) It might lead to one very false one, sir, and that is that unless you get the return of all that the private wells were doing, if there was any diminution in the general level of the water or anything of that sort suspected, it would lead to the conclusion that it was caused by the companies pumping, whereas it might be caused by other pumping of which no cognizance was taken.

(*Mr. Littler.*) It would surely involve examining private wells also.

(*Lord Robert Cecil.*) What other pumping is there of any importance?

(*Mr. Pember.*) There might be that pumping.

(*Lord Robert Cecil.*) There is not.

(*Mr. Pember.*) There might be in the future.

(*Mr. Littler.*) It would certainly involve, my Lord, as a matter of justice, as a corollary, that the companies should have the opportunity of inspecting all private wells.

(*Mr. Pember.*) Quite so.

(*Mr. Littler.*) They ought to be inspected, or else they would use an argument which we could not answer as to the lowering of the wells when we denied that it was caused by us.

(*Mr. Pember.*) Two or three big breweries which depend on pumping get through a great deal of water.

22,872. (*Chairman to Witness.*) Is there such a thing as a private person pumping from a well in your district?—Yes, there are brewers and the local authorities who pump from wells in our district.

22,873. It is a fact, is it not, that during 1898 the River Lea discharged less water than in previous years?—Yes, that is so, but that was solely owing to the deficiency of rain and the failure of the upper springs that fed the rivers. I do not know whether you would like me to go into that.

22,874. Do you mean deficiency of rain in the year 1898 or in other years?—In the years preceding.

22,875. What was the deficiency in the years preceding?—The average discharge of the River Lea during 1898 was lower than in 1864, which was a year of very great drought. But the deficiency is fully accounted for by the lowness of the rainfall during the five preceding years, and more especially during last winter. The rainfall in Hertfordshire during the five years, 1893-97, was nearly seven inches below that of the five years, 1859-1863. The average discharge of the Lea during 1898 was 33.51 per cent. of the rainfall of the six months of last winter over the Lea watershed above Feilde's Weir, and the average discharge of the River Lea during 1864 was 34.62 per cent. of the rainfall of the corresponding six winter months over

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the same area. In other words, practically as large a proportion of the winter's rainfall was discharged by the River Lea in 1898 as in 1864.

22,876. If I understand you aright, you say that the discharge of the Lea in any one summer is governed by the amount of the rainfall in the preceding winter?—No doubt.

22,877. I understood you to say, in answer to Major-General Scott, that you cannot ascertain the rest-level in your wells?—We can occasionally. Now that we are pumping more than we did formerly it is very much more difficult than it used to be to get those figures.

22,878. Are you able to say whether or not the rest-level of your wells in the chalk has been lowered during the last 20 years, say?—No, we have no evidence whatever that it has; our pumping level remains the same, and whenever we do get a chance of measuring the rest-level we find no lowering of it whatever, that is, in our wells in the chalk in Hertfordshire. In the wells nearer London, under the tertiaries, we do find a sinking of the water-level.

22,879. Do you mean a sinking progressive from year to year?—Yes, progressive.

22,880. What has been the sinking of the rest-level in those wells that you have just mentioned—the wells near London?—Under London it has been something like a foot a year.

22,881. And that continues, does it?—Yes. Of course, that does not affect the yield of our wells, because our pumps are low enough to draw what is wanted.

22,882. (*Major-General Scott.*) There would be no difficulty in your recording the daily pumping from a well and the pumping level coincident with that daily pumping?—Yes, that might be recorded, and, of course, if it went into the hands of someone that could understand what it meant, there would be no objection, but to publish it broadcast, I think would be very objectionable.

(*Mr. Pember.*) Perhaps you would not mind asking him, my Lord, what is the relative depth of the chalk wells and the tertiary wells.

22,883. (*Chairman to Witness.*) Well, you heard the question, what is the answer?—There is very little difference in the depth.

22,884. What is the depth?—About 200 feet is the average depth of our wells, but then we have bore holes going down much deeper from the bottom.

22,885. Both in the chalk wells and the wells in the tertiaries?—Yes, in both.

22,886. As I understand, you admit that wells within the cone of depression of your wells are lowered and injuriously affected?—That is so.

22,887. But you say outside the cone of depression you think you do not produce any prejudicial effect upon other wells?—No, I am sure we do not.

22,888. What do you look upon as the limit of the cone of depression?—It is very irregular and uncertain, it does not often extend very far. I think that the figure which was given by Mr. Middleton in evidence is a very fair one; that is, that the water inclines upwards at an angle of about 1 in 10 as a rule. That is to say, if you pump 100 feet down, the effect disappears as a rule, not invariably, at 1,000 feet away.

22,889. (*Major-General Scott.*) When your cone of depression is filled up, after you cease pumping, where does the water come from that fills it up?—The water is always passing on in one direction, and we abstract it and form a cone; when we cease to abstract it, it simply flows on and fills up the hollow cone.

22,890. You think there is not a drop in the general level consequent on the filling up of that cone?—No, because beyond the edge of the cone, whether we are pumping or not, the level remains the same. As soon as you get outside the cone in the direction from which the water is coming the level is unaltered, whether we are pumping or not, as soon as you get out of the range of the cone.

22,891. How do you know?—From numerous experiments.

22,892. If there was a general fall in the level in filling up such a depression as that, it would be so infinitely small for one cone that no one could measure it, could

they, without extremely delicate instruments?—It has been measured in numerous cases, we may have to bore holes or wells in a line extending away from the well, and can gauge the level of the water in each of those holes, and by taking observations both when we are pumping at the well and when we are not, we can find at what point the effect disappears.

22,893. (*Chairman.*) The water all comes, I suppose, from the outcrop of the chalk?—Yes.

22,894. Where does that take place in your district?—It is in Hertfordshire and Bedfordshire.

22,895. Can you fix the place where the outcrop of the chalk is in Hertfordshire?—I have a map here, if you would like to see that, and I can show it to you. (*Handing in map.*) The dark brown represents the London clay in the tertiaries, and the pale blue above is the chalk. It hardly shows the whole of the chalk. The water that we draw falls upon the outcrop of that blue portion of the map.

22,896. The clay and the chalk meet at a line that runs, roughly speaking, from Hertford to Beaconsfield—that is far enough to take it?—That is so; it extends along here.

22,897. You have some wells in the outcrop and others nearer London, through the London clay, is that so?—Yes. I do not know whether you would care for me to point out that in the past the River Lea and springs have failed as they do now, and we have records of such failures. It is now assumed that when wells and springs fail it is due to the pumping of the Water Companies, but I think that it is proved by evidence that has been given in the past that it is not so. Mr. Nathaniel Beardmore, the eminent hydraulic engineer, in his evidence before the Royal Commission on Water Supply in 1868, said: "I find that the upper 'springs (in the area of the River Lea) fail completely 'after long dry periods, and this reduces the general 'volume of the river. The lower springs do not vary 'much in their mean supply; they are very permanent indeed; but the difference of their volume, 'between May and November, is frequently very 'considerable.'" He also said: "On the Lea, whenever we get below 5,500 cubic feet per minute at 'Feilde's Weir, the highest springs begin to fall off." He also said: "Woolmer's Spring, between Hatfield 'and Hertford, is a very beautiful spring, but still it 'is high, viz., 144 feet above Trinity, and it always 'fails in low years. It has failed in 1855, 1859, 1863, '1864, 1865, and 1868," and it has failed in 1898.

22,898. (*Mr. Pember.*) Those are the springs Mr. Middleton called seasonal springs, are they not?—I suppose so; I daresay.

22,899. (*Chairman.*) Were you not pumping in those years?—No.

22,900. When did you begin to pump from wells?—We did pump a little then, but to such a very, very small extent, that it could not possibly be suggested that we could affect those springs. This spring we are speaking of is $4\frac{1}{2}$ miles away from any of our wells.

22,901. From what date did you begin to pump from wells to any considerable amount?—About 1870—or in the seventies—we began to increase our pumping.

22,902. I will just ask you one or two questions about what has been suggested, namely, the partition of your district at the county boundaries—the boundary of the counties of London, Middlesex, and Hertfordshire. What do you say as to that? Are those suitable lines of demarcation?—I think they are most unsuitable lines of division between water-supplying bodies, because the positions of those lines were determined by other considerations altogether from those connected with water supply, and without regard to the physical necessities of water collection and distribution.

22,903. Could the sources of supply that you make use of be conveniently divided between the different counties?—I do not see very well how that could be done. The bulk of our sources are in Hertfordshire, which would want least of the water, the smaller number are in Middlesex.

22,904. If you were to split up the sources of supply and the mains of distribution between the different counties, would considerable new works be necessary?—Yes, it would certainly be necessary to provide very complicated and expensive works to enable the water to be conveyed from one part to another.

22,905. Many of your reservoirs are inside the county of London, are they not?—Yes, several of the company's reservoirs are supplied from the Hornsey pumping station, which is in Middlesex; and if the London and Middlesex County Councils were each to take the works in their own districts, either new reservoirs must be provided in Middlesex or a new pumping station must be provided in the county of London, involving in either case great expense without accomplishing any useful purpose whatever.

22,906. The Hornsey pumping station is from a well, I suppose?—There is a well there, but it is a distributing station mainly.

22,907. Where does the water come from that it pumps?—It comes along the New River, having been brought from the wells of Hertfordshire.

22,908. Your Hornsey wells pump into the New River, do they?—Yes.

22,909. You have got a reservoir in Middlesex called the Crouch Hill Reservoir, have you not?—Yes, and that is supplied from a pumping station in the county of London. At the Stoke Newington station the filter beds are in Middlesex, while the pumping engines that lift the filtered water are in the county of London.

22,910. What does that pumping station in London pump from? Is that from a well?—No, that is a distributing station.

22,911. There again, then, it is water from the New River, is it?—Water taken from the New River, filtered and pumped up to the service reservoirs.

22,912. Are there some of your mains that you use alternately as pumping and distributing mains?—Yes. In the case of those mains in which the flow of water is practically always in one direction, meters could be inserted at the crossings of the county boundaries; but, as is frequently the case, mains are used alternately as pumping and distributing mains, in that case, of course, meters would not be applicable on account of the frequent reversal of the direction of the current.

22,913. You would have to lay a new main, therefore?—New mains that would otherwise be quite unnecessary would be wanted.

22,914. (*Major-General Scott.*) When the draught from the main exceeds the pumping, then it flows from the reservoir?—Yes, that is so.

22,915. And the current is backwards?—Yes.

22,916. (*Chairman.*) I do not think that the division of your works between urban and rural district councils has been seriously suggested by anybody—the division between counties is the only one?—That would, of course, introduce greater difficulties still.

22,917. Yes, you have got a vast number of local authorities in your district, I believe?—Yes. The county or district councils of Hertfordshire, Middlesex, the Municipal Borough of Hertford, Ware Urban, Ware Rural, Hoddesdon, Cheshunt, Enfield, Edmonton, Southgate, Tottenham, Wood Green, Hornsey, and South Hornsey.

22,918. (*Major-General Scott.*) The district authority is the water authority under the Sanitary Act, is it not?—I believe so.

After a short adjournment.

22,919. (*Chairman.*) The only other thing I have to ask you is to put in the return you have been kind enough to prepare, giving particulars as to your works and supply?—Yes.

(*The witness handed in Return. See Appendix U, 6.*)

Cross-examined by Mr. FREEMAN.

22,920. I just want to ask you two or three questions mainly on facts. You were asked a question as to the rate of supply per head, and you said it was somewhere about 30 I think, and then on a particular occasion it rose up to 38?—Yes.

22,921. Would you kindly just see whether these figures are correct? Taking in the year 1898 the three summer months of July, August and September, was your supply for July 35·76, for August 35·94, and for September 36·28?

(*Mr. Pope.*) Over the average of the month?

(*Mr. Freeman.*) Yes, taking the average of the month.

(*Chairman.*) Where are you taking that from?

(*Mr. Freeman.*) I am quoting some figures which have been worked out by Sir Alexander Finnie from figures supplied by the company.

(*Chairman.*) Is that the daily supply per head for those months?

22,922. (*Mr. Freeman.*) On the average of the month. (*To the witness.*) I want to refer you, for accuracy's sake, to the actual answer which you gave in your evidence before Lord Balfour's Commission, which is to be found on the minutes of evidence, page 3, Questions 86 and 87. Have you got that?—Yes.

22,923. At Question 86 you were being asked about what you were able to get from the wells. You were asked then: "Will you kindly go through the wells giving the quantities, and I will ask you a general question about them afterwards?" Then you went separately through the various wells and gave the quantities opposite each; you see that?—Yes.

22,924. The next question is the one I want to direct your attention to. "Have you ever taken those quantities of water simultaneously from those wells?"—(A.) Not from the whole; we have never needed to do so. I may say that these figures that I give by no means represent what we can get out of the wells by working the engines a little faster, but they are worked at a very moderate speed. We actually do get those quantities whenever we are working, but if we needed more water, we could by increasing the speed get a great deal more out." So that apparently in that answer you represented to the Balfour Commission that you were actually getting—not that it was available and lying in the earth—but that you were actually getting the quantities there which come up to 34 millions?—That is so, but we were not getting that all at once—sometimes we were pumping from one well and sometimes from another.

22,925. You see the answer you gave was: "We actually do get those quantities whenever we are working"?—Yes, that is so.

22,926. I should just like to ask you a question on that. You said there, you know, that you could get a great deal more; in your own individual opinion, could your company and the East London—or, taking your company, could it derive all the water it requires from the Lea Valley?—I do not think we could derive all we want for 40 years ahead—I do not know about the New River Company, but you are bringing in the East London.

22,927. I corrected it by leaving that out, because, of course, you do not speak for the East London. In your opinion, could the New River Company get all the water it requires from the Lea Valley?—I should almost think so; but it is very difficult to say what the requirements of 40 years ahead will be.

22,928. So far as you can judge, you think you will be able to get what you require?—I should almost think we could.

22,929. Now, on a question of fact, can you tell me what is the average depth at which your mains are laid?—Three feet. Some were laid at 2 feet 6 inches; but now they are all laid at 3 feet.

22,930. I think I may say that, as regards your company, there is nothing less than 2 feet 6 inches; is that so?—Yes.

22,931. The result is, I believe, that your mains have not been affected much by frost?—To a very trifling extent.

22,932. As I understand, on your advice, all mains that are laid now are to be 3 feet deep?—Yes; that is done.

22,933. Do you mean 3 feet from the top of the main, or from the ferrule above the main?—Three feet from the uppermost part of the socket of the pipe.

22,934. So that there is always 3 feet that is clear between the surface of the ground and the beginning of your pipe?—Yes.

22,935. One question as regards the point as to recording the observations which you took. I daresay you recollect the passage in the Report of Lord Balfour's Commission, in which it said that "the great difficulty which we have had to encounter has been in getting accurate and reliable information as to the actual effect of the operations now carried on; the importance of procuring this will increase each year as the limit of what can be taken from any district with

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"safety is gradually being reached"—that is in paragraph 108. It is the fact you were before Lord Balfour's Commission?—Yes.

22,938. It is the fact that that Commission attributed considerable importance to getting reliable data of the actual pumping of the companies, did they not?—As far as the New River Company were concerned, they afforded them every possible information they could, and gave them all the particulars of their wells and water-levels most readily.

22,937. Then you were able to do, as regards that Commission, what you told his Lordship would be misleading if done to other people?—We gave them all the information that they asked for; but they did not ask for the same particulars as have been referred to here.

22,938. Do you think you misled them?—It was given into the hands of experts, who examined it, and who asked for explanations, and who, we felt sure, would endeavour thoroughly to understand it.

22,939. Do you not think exactly the same thing would happen if the information was given to a public authority. It would be handed to their experts, who would bring their minds to bear upon it, and use it in the proper way?—I am not quite sure that, if some of these facts were made known to the general public, there would not be some persons who would not understand them, and, consequently, draw wrong inferences from them.

22,940. But, leaving the general public out for the moment, would there, in your opinion, be any danger or difficulty in handing the results of your pumping to the experts of the proper authorities?—I do not think there would be any objection to handing it in to a friendly expert; but there would be to a hostile expert.

22,941. You think there would be something he might find out in it?—No.

(Mr. Little.) Or a neutral or an impartial expert, I might say.

22,942. (Mr. Freeman.) There is only one other matter, I think, I want to ask you about; you told us it was very difficult to find the rest-levels of your wells?—Yes, it is.

22,943. Do you know all the rest-levels of the adjoining wells which are in the hands of the public authorities—I suggest to you, for instance, Tottenham or Enfield?—I do not think I do.

22,944. Are you aware that they themselves have records of their rest-levels?—I am not aware of it, but I should think they had.

23,945. Why can they find out their rest-levels, and you cannot find yours?—Because their pumping is so small in extent that they can give their wells sufficient rest to allow of the water rising.

22,946. Do you know, as a matter of fact, that the actual rest-level of these wells is somewhere between 40 and 50 feet below mean high tide level?—The rest level?

22,947. es?—I should not have thought it was so low.

22,948. And you would agree that the whole of that rest-level has been greatly reduced, and must have been reduced by your pumping?—Certainly not.

22,949. What do you think it has been reduced by? By the pumping under London.

22,950. General pumping?—Yes.

22,951. Nothing to do with you?—With regard to the pumping under London, so far as we have pumped from under the London clay, we have contributed to lower that level, but there are dozens, I may say hundreds, of wells working away at the same basin.

22,952. Are you the nearest pumpers to those two wells—Tottenham and Enfield?—No, I think not. There are large breweries and factories in the Lea Valley that pump a considerable quantity. I cannot speak accurately, but I should think they are much nearer than we are.

22,953. Is their pumping anything comparable to your pumping?—Some of these factories pump large quantities; of course, I do not know what they do pump.

22,954. You are the nearest of any of the companies that are pumping, are you not?—Yes, the nearest of the water companies.

22,955. I think you say you have not contributed, except in the same way that everybody else contributes who pumps underneath London itself—that is your contention?—We pump from underneath the London clay, and certainly, we are drawing from the same basin as other wells.

22,956. (Chairman.) Just let me follow that. You are pumping under the London clay, and other people are doing the same?—Yes.

22,957. And you say that lowers the level in wells, where?—Under the London clay—not in the Hertfordshire chalk—it does not affect that in the least.

Cross-examined by LORD ROBERT CECIL.

22,958. I will ask you a question about that in a moment if I may. There is one figure I did not understand that you gave; you said that you would require an expenditure of 260,000*l.* for the augmentation of power and means of supply—I did not quite understand what that meant; do you remember giving that figure?—Yes.

22,959. What do you mean by augmentation of power and means of supply; do you mean fresh wells, or what?—Wells, enlargement of wells, improvement of machinery, improvement of river channel, reservoirs, filter beds.

22,960. Can you tell me what you contemplate pumping from the wells as represented by that figure?—No, I cannot tell you what we shall pump.

22,961. You can give me some idea—you say you are going to enlarge the wells and make fresh wells—how much?—There is no reason why we should not get several million more gallons than we do now from our wells.

22,962. I am afraid I do not make myself plain; you have put in a certain amount of expenditure, which it will be necessary for you to make in order to meet the demands made upon you between now and 1937?—Yes.

22,963. In that estimate of expenditure you give us a certain figure, 260,000*l.*, which you say is partly to be spent on wells; you must be able to tell me how much you are going to increase the pumping from wells by that figure?—We contemplate by means of that money being able to pump constantly the 34 million gallons, instead of the 24 millions that we could pump continuously in 1892.

22,964. That is just what I wanted to know. You contemplate going up to your 34 million gallons actually?—Yes.

22,965. Instead of your possible 34 million gallons, and actual 24 million gallons?—Yes. We should so duplicate the machinery as to enable us to do that.

22,966. Is that all you contemplate?—No; I think it is possible that we might get, it may be, two or three more million gallons from the wells.

22,967. You have got some estimate, what is your theory of it—I do not understand your evidence, you know?—That we shall get between two and three million gallons more from the wells themselves.

22,968. 40 million gallons altogether?—34 and 2 would be 36.

22,969. I only want to know the figure, that is all—36 million gallons. You quoted some evidence of Mr. Nathaniel Beardmore in 1868; was that before the Duke of Richmond's Commission?—Yes.

22,970. Could you give me the reference to it?—Questions 7449, 7456, and 7457.

22,971. You are familiar, of course, with the Report of that Royal Commission?—Yes.

22,972. Do you remember paragraph 146, which I might, perhaps, just read to you: "We do not agree with those who expect to get an almost unlimited increase of quantity of water by simply tapping the natural reservoirs in the chalk, for the supply to them must obviously be limited by the amount of rainfall. Moreover, as the water which penetrates into the reservoirs, raising the water line, more or less above the level of the adjoining valleys, ultimately in greater part finds its way by springs into streams at the lower level of the district, any water drawn from the store by artificial means will most probably be at the expense of those streams. If this be true, it follows that any water obtained by tapping

"the chalk reservoirs that feed either the River Lea or the Thames above Hampton would only *pro tanto* diminish these streams, and would, therefore, be 'little or nothing gained to the general supply.' That, I understand, you do not agree with?—No. They say, 'If this be true;' and now we know it is not.

22,973. You know it is not?—From recent experience.

22,974. You say you know it is not; how do you know it is not; what is your reason for saying you know it is not true?—Because we know that the pumping from our wells in the open chalk does not affect the level of the water in the chalk outside the depression made immediately around the well, excepting it may in some cases in which there are fissures in the chalk extending for some distance—but they are very rare and exceptional.

22,975. You say you know that; how do you know that?—By obtaining the levels of the water in the chalk at times when we are pumping.

22,976. Have you got those levels?—I have got numbers of levels.

22,977. Would you have any objection to furnishing me with them?—I really have not anything here, they are distributed through papers and documents of various kinds. I have nothing that I could hand in.

22,978. This is the foundation of the whole of your evidence on this point; I submit that you ought to give us the data on which that evidence proceeds—do you refuse?—I really have nothing that I can hand in.

(Mr. Pope.) You must not take it as a refusal. All he says is, it is an extremely difficult thing, and if it were of sufficient importance I can do it, but I have not done it, and, therefore, I have not got them to hand. That is all he says. He certainly does not refuse.

22,979. (Lord Robert Cecil.) Do you mean to say that you have not made any kind of *précis* of that evidence so as to enable you to arrive at this conclusion that you have stated to this Commission?—From time to time, in the course of one's practice, one accumulates facts.

22,980. And you gather a general impression, but you have nothing that you can put before the Commission, which supports that general impression?—I have not prepared anything for the Commission, certainly.

22,981. That is what you say about that. You admit that there is a depression under London?—Yes.

22,982. Which is the northernmost of your wells where that depression is felt?—It is felt to some extent as far as Enfield.

22,983. How many of your wells does that include?—Four.

22,984. You say it is not felt beyond that?—No, when we get out into the open chalk we do not feel it at all.

22,985. Hoe Lane Well, is that the well that you have in your mind?—Yes, that is the well.

22,986. What is your explanation of not feeling it when you get into the chalk?—My explanation is that there is, as has often been explained before, a stream of water passing on from the upper part of the chalk towards the lower levels. That there is a stream we know from the fact that there is a gradual incline in the surface of the water the whole way, and, therefore, the water must be passing from the upper level to the lower. Would you mind repeating your question?

22,987. I am quite satisfied with that as far as it goes?—Would you mind repeating your question?

22,988. No, I think that is quite unnecessary. Why does not that stream flow into the depression under London, why does it skirt the depression and go off to the sea to the left?—It cannot get through, because where the weight of the clay comes upon the chalk it seems to have compressed the chalk and closed up the fissures so that the water can get through only at a certain rate, but not fast enough to make up for the withdrawal of water that takes place from the numerous pumping stations in the basin of the London clay.

22,989. I understand you, therefore, to say that the water cannot flow in under London as quickly as it is pumped out into London by the wells in London and the neighbourhood?—Yes.

22,990. Do you know how much is pumped daily in that way?—I do not know, but it has been estimated at about 12 million gallons a day.

22,991. Therefore, the whole flow under London is not equal to 12 million gallons a day?—Yes, there is a considerably greater flow than that, but then this will not keep up the level. There is a great deal more still passing on; all that comes through is not intercepted by those wells by any means.

22,992. Surely you should think a little before you make such a statement as that. Does the water make a dip and then come up again, or what is your suggestion? How does it get on? Surely the first thing the water would do would be to find its own level, at least, I used to be taught so when I was at school, and in that case it would fill up the depression under London first of all, I should have thought?—But these wells that go down into the chalk only draw from the immediate locality; they can only take water from the fissures.

22,993. Be careful, do not make answers of that kind; you have already expressed the view that there is a depression under London which means a depression generally under London?—Yes.

22,994. That means to say that you are taking water quicker out of the chalk under London than it is coming in, or it means nothing?—You must understand that that water which is under London is not stagnant—that is all passing on too. If you had a row of wells all along to receive every section of water as it came along and to intercept every fissure, then I say your pumping would be a measure of the water coming in; but these wells are scattered about, and there are many spaces between the wells where a quantity of water passes on unintercepted towards the Thames or the sea.

22,995. I am at present wholly unable to understand your theory of the water under London; it seems to me that if you have the water in a reservoir and you pump from that reservoir so that you lower the level in the reservoir and you let water into the reservoir, the first thing will be that you will fill the reservoir up?—Yes, but the thing is you do not have a reservoir.

22,996. Then what do you mean by saying that there is a depression under London; what is the meaning of that phrase if it does not mean that?—I mean that the chalk is depressed; the level of the chalk under London is much lower than it is in Hertfordshire; that is what I mean by a depression in the chalk.

22,997. I see—nothing to do with the water level under London?—The water level also falls in consequence of the friction in passing through the chalk; certainly, the water level falls also.

22,998. Has not it, in fact, fallen irrespective of that because you have pumped water out of the chalk under London; is not the water in the chalk under London lower than it was 20 years ago?—Yes, that is so, but not universally; it is in the neighbourhood of the pumping.

22,999. Surely it is universally lower as far as we know under London; is there any well in the whole of London where it is not lower than it was 20 years ago?—Yes, I think so.

23,000. Well, what is it?—There is one at Kensington.

23,001. One at Kensington?—Yes.

23,002. What is it?—It is exceptional, but there is one there that I have particulars of.

23,003. Where is it. What is it called?—It is at Kensington Gore.

23,004. Does it go down into the chalk?—Yes.

23,005. Do you say that the water there is of the same level as it was 20 years ago?—I am informed so.

23,006. Have you investigated it yourself?—No, I do not know the well myself.

23,007. Can you give me any particulars as to that well?—I have not them here.

23,008. What is the name of the well, please—because this is quite a new well that Mr. Middleton was wholly unacquainted with?—It is at Kensington Gore. I do not remember any other description of it.

23,009. An unnamed well at Kensington Gore is exceptional among all the wells in London; is that the evidence?—That is one instance in which the water level does not seem to have gone down.

23,010. Very well. I will not ask you any more questions about that. Now, just one or two questions

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Mr. J. Francis.
24 Jan. 99 about your evidence as to the discharge of the River Lea; you say that the discharge of the Lea was lower this year than it had ever been before, because of the failure of the rain—

(*Chairman.*) In the preceding winter.

23,011. (*Lord Robert Cecil.*) Yes, in the preceding winter. Is that what you say?—Yes.

23,012. Have you looked into the figures as to the discharge of the River Lea for the last 15 or 16 years? Yes, I think so.

23,013. I put it to you, then—because I can only put it to you as it is a question of fact—is not it the fact that, taking the average discharge of the River Lea, it has sunk without any relation to the rainfall, and out of all relation to the rainfall in the last 16 years?—No, I should say, generally, that is not correct.

(*Mr. Pember.*) Mr. Middleton distinctly denied that.

(*Lord Robert Cecil.*) No, he said he did not know.

(*Mr. Pember.*) Excuse me, because I took particular note of it. What he said was this: I have watched the flow of the Lea for the last 15 years, I think he said, and have watched the flow of the Thames, and I have seen the relation between the flow of the Lea at the beginning of the period and the flow of the Thames at the same time. There is no material difference, as I look down those years, between the flow of the Thames now and the flow of the Lea now, compared with what it was 15 years ago; and, therefore, said he, inasmuch as they are close together, they are under the same conditions as to rainfall, and I see no cause at work to deplete the Lea other than the causes which deplete the Thames, and, therefore, the only cause is rainfall, unless you suppose—

(*Lord Robert Cecil.*) A very desirable piece of evidence.

(*Mr. Pember.*) It is on the Notes.

(*Lord Robert Cecil.*) I have no doubt it is; I am not in the least disputing that.

(*Mr. Pember.*) Then I say you did not cross-examine to that, because I looked very carefully for it.

(*Lord Robert Cecil.*) In fact, I did ask Mr. Middleton the precise question I ask Mr. Francis, or something very analogous to it; and that is not exactly what I asked. What I said was: Do you know that there has been no relation in the diminution of the flow of the Lea during the last 16 years to the amount of rain that has fallen in the Lea Valley?

(*Chairman.*) That would be a most extraordinary fact if it was true.

(*Witness.*) It has been in proportion to the rainfall.

(*Lord Robert Cecil.*) I put it too broadly—that there has been no direct relation, and that the Lea has gone on decreasing.

(*Chairman.*) However much rain there was?

(*Lord Robert Cecil.*) No, on the average, but there has been no such decrease in the rainfall. I can put in the tables directly if your Lordship would like to see them?

(*Chairman.*) No.

(*Witness.*) In former periods of drought the discharge of the River Lea has diminished just in the same manner. As I say, in 1864, there was a very dry time, and the proportion of the rainfall that came into the river was as small as in 1898.

(*Lord Robert Cecil.*) I know you gave those figures.

(*Mr. Pember.*) That is what Mr. Beardmore seems to have said.

23,014. (*Lord Robert Cecil.*) No, Mr. Beardmore did not say that; he did not give any evidence to that effect. (*To the witness.*) What I was asking you is this: Taking the years 1880 to 1882, this is the kind of figure, the average daily flow of the River Lea was 181 million gallons, the average yearly rainfall was 26·92 inches, and the average winter rainfall 11·76. Taking the years 1895 to 1897, the average daily flow was only 103 million gallons, making a diminution of 78 million gallons, the average yearly rainfall was 26·10, which is practically the same as the average yearly rainfall of the other three years, and the average winter rainfall was 13·87, which was a much larger winter rainfall. Therefore, you have a diminution in the flow of the Lea, and yet an increase in the winter rainfall, and substantially the same amount of rainfall during the whole year.

(*Mr. Pember.*) We should want to know a lot of things; we should want to know what the rainfall was in the year before.

(*Lord Robert Cecil.*) Those are three years, Mr. Pember.

(*Mr. Pember.*) We should want to know, also, the way in which the rain came down. It makes a vast difference whether it comes down in sudden storms, or whether it comes down gently.

23,015. (*Lord Robert Cecil.*) You see, Mr. Francis's statement compared one particular year, 1864, with another particular year, 1898, in which he says the same proportion of the rainfall found its way into the River Lea. (*To the witness.*) Just let me ask you one or two questions about control. Do you agree with me that a public company, pumping water from wells for the purpose of supplying London, are in a different position from private owners pumping water from wells?—I do not know why they should be different.

23,016. Does it not strike you that, apart from technicalities, if a private owner pumps, say, 200 or 300 gallons a day from his well, that cannot make any difference to the surrounding people, whereas if you pump three or four million gallons a day, that may well make a difference?—Yes, but some of the large factories pump large quantities.

23,017. What kind of quantities?—Some of them, I should imagine, such as breweries, would run up to a million, or something like that.

23,018. A million gallons a day?—I should think so, some of them require water for cooling purposes.

23,019. Yes, but you are not going to suggest to me that there is any brewery in Hertfordshire which pumps anything like one million gallons a day from its well?—In Hertfordshire, I suppose not; I should think not there.

23,020. Nor, I should think, in London either?—But I daresay they go to half as much.

23,021. If they went to half as much, what is the average you pump from each of your wells?—Two or three million gallons a day.

23,022. Even that would be a sixth of your amount, and then you have got 13 wells which make your 29 or 30 million gallons a day. Does it not strike you that you are in a very different position in fact, whatever you may be in theory, from any private owner?—We pump more water than anybody else.

23,023. And so very much more water that you are really doing quite a different thing to what the private owner is doing. Assuming that to be so, do you not think it would be reasonable that certain control should be exercised over the way you sink, and the way you use your wells?—I do not think so. I think that those who are responsible for providing the water should manage their own business themselves.

23,024. (*Chairman.*) Without any regard to what they do to their neighbours?—Parliament gives certain powers to the companies and they exercise them.

23,025. (*Lord Robert Cecil.*) That is, of course, the point; we do not doubt that you have the power to do it now. The question is whether you ought to have the power to do it. I suggest to you—because I just want to bring it before the Commission—that there should be a general enactment preventing companies in the same position as yours from sinking wells unless those wells are specified in their Parliamentary powers—that they shall be bound to have a special Act in fact in order to enable them to sink a well for the general supply of the public or the general supply of a great city. Do you see any objection to that?—I do not see the necessity for it.

23,026. And that the amount which should be pumped from such wells should be specified in that Act; do you see any objection to that?—Yes. Until you have got the well sunk and have learnt what can be done with it, you cannot tell what it would be advisable to take from it.

23,027. You can surely fix a maximum?—It would be possible to do that.

23,028. You think it is right that they should be allowed to sink wells and pump as much as they can get from them without regard to what they are doing to their neighbours?—I do not see what we do to our neighbours. We do no harm.

23,029. I will not go into that all over again. Apart from that, I wish to ask you whether you do not think it would be only right and fair that careful observation should be kept under the control of some public authority, the County Council, I suppose, as to the effect of the pumping of your own wells on other wells and streams by means of gaugings on the neighbouring streams, and that returns thereof should be made to the county council as well as to the Water Examiner?—I do not see why. It is a different question altogether, whether returns should be made to the Water Examiner, but a county council is not always competent to deal with these questions and I think they might, as I say, be misled, by a certain number of facts without having the whole of the facts before them.

23,030. What do you mean by misled, led to the opinion that you were doing harm?—No. I mean led to arrive at a false conclusion. An expert would know what he did not know, but a county council would not know that I afraid.

23,031. They sometimes know what other people do not know, but they have experts to advise them—no, no doubt, as able as yourself—but, still, experts?—They may or they may not; I do not know that.

23,032. You do not know that they have experts?—There is no necessity that they should. The returns might be examined by other than experts.

23,033. Do you not know, as a fact, that both the County Council of Hertfordshire, and, still more, the County Council of London, have experts to advise them?—At times they have, I believe.

23,034. You have said repeatedly that there is a danger of their being misled. I must put this to you—you remember the demand that was made, or the request that was made, that you should fix a gauge in the Ohadwell Spring; would you explain to the Commissioners how on earth that could have misled anybody?—It would have misled people very much, I think, because they would have taken the levels of the water in that spring at times when we were pumping, and at other times when we were not, and a measurement taken without regard to all such circumstances would be of very little value.

23,035. May I suggest to you that they would be able to see whether you were pumping or not?—They would not be able to see, if they went there, whether we had just been pumping and had stopped, and that might affect the result very much.

23,036. I suppose you would have somebody there who would tell them those facts?—As I say, if we could tell them everything we knew, then they would know as much as we do, and be able to draw true conclusions; but unless they are on the spot always, as we are, they would be at a disadvantage.

23,037. Surely, one of the facts which you must know, which is within your knowledge of this subject, is what height the water is at; what is the reason why that fact should be concealed from them? You can supplement it by any other information that you think is desirable; but why should you conceal that fact from them unless you think—I must put it to you frankly, as, of course, it is the suggestion that underlies the whole of this cross-examination—unless you think there is some other less avowable reason why they should not know the facts?—I say there is no reason whatever for withholding them from an expert who understands the matter, and has time and leisure to go thoroughly into the question; but to give a few isolated facts, such as levels of water, to an outside body, I think would not be for their good or anyone else's.

(Mr. H. W. Cripps.) I should like to know, as a matter of law, do you contend that the County Council has no *locus standi* at all, or any right whatever of interfering, because they are a county council, with a well sunk on any other man's ground?

(Lord Robert Cecil.) You ask him, first, as to *locus standi*.

(Mr. H. W. Cripps.) I am putting *locus standi*, I do not mean technically, before a Parliamentary Committee; but I mean, has he any right whatever to interfere?

(Lord Robert Cecil.) Certainly not. That is the point.

(Mr. H. W. Cripps.) You are assuming that the water is taken which belongs to somebody else?

(Lord Robert Cecil.) I am not, indeed.

(Mr. H. W. Cripps.) Or which might belong to somebody else?

(Lord Robert Cecil.) No, indeed; that is not the point. It is no doubt entirely due to the difficulty one has in presenting one's case in cross-examination; but my point has been throughout that, by excessive pumping, you are injuring other people—not necessarily that you will take their property, but you will take water which would, perhaps, bear up merely water which would otherwise flow down their stream—not a technical legal injury.

(Mr. H. W. Cripps.) Have you any precedent which establishes that as a legal proposition.

(Lord Robert Cecil.) No, certainly not; on the contrary. If I had, I should not be here at all. I should take very little interest in the proceedings of the New River Company if I could stop them—except in the Courts. If I were legally injured, I should have my remedy in the Courts. I quite agree; that is the whole point. If I am not legally injured, my only remedy is to come to such a body as this Commission, and Committees of Parliament, from time to time, and say, "I have no legal injury to complain of, any more than I have by competition, for instance, if I am a railway company, but I ask to be heard, and I want certain protection which will free me from a practical injury, because I have not any legal injury."

(Mr. H. W. Cripps.) I understand what you mean entirely. You say that the law is not sufficient; that there must be some alteration made in the law generally. It does not apply to this particular case more than any other.

(Lord Robert Cecil.) No, I quite agree.

(Chairman.) There is no right whatever in underground water.

(Lord Robert Cecil.) There is no right whatever.

(Mr. H. W. Cripps.) Water that passes underground is no more yours than the clouds which pass over your heads?

(Lord Robert Cecil.) I entirely assent. That is the whole difficulty.

(Chairman.) You want to alter the law of underground waters as against water companies—not as against brewers or anybody else.

(Lord Robert Cecil.) I say it is a question of degree like everything else.

(Chairman.) Indeed.

(Lord Robert Cecil.) It is similar to hundreds of instances which will, no doubt, occur to your Lordship.

(Mr. H. W. Cripps.) I quite understand how you put it. We agree about the law of the matter.

(Lord Robert Cecil.) Entirely. If I may venture to make the observation to the noble Lord, there are many things which it is legal for one man to do, but which it is not legal for a number of men to do. Similarly, it is legal if you do it a little, but it is not legal if you do it very much, or it ought not to be.

(Chairman.) Those are propositions that you must not take me as assenting to. But I do not live in Hertfordshire.

(Mr. Mellor.) As I understand, Lord Robert Cecil, what you are complaining of is an injury without a remedy at law.

(Lord Robert Cecil.) Exactly.

(Mr. Mellor.) And you say that if this system goes on, and is proceeded with to an excessive extent, it will seriously injure a great many people living in the country.

(Lord Robert Cecil.) I do say that. I say it will seriously injure them, and, if it is not stopped in time, you cannot get it back. You will have your industries destroyed, and your county dried up, and the injury will be past remedy.

(Chairman.) Except that after such a month of rain as this, all injuries will have disappeared.

(Lord Robert Cecil.) If I am right, I seriously fear that it might take even years to refill this vast reservoir in the chalk.

Mr. J.
Francis.
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(*Witness.*) May I be allowed to point out that there is no evidence whatever of any serious injury to the people of Hertfordshire.

(*Chairman.*) We have had the evidence of Sir John Evans.

(*Lord Robert Cecil.*) And I think we could supplement that evidence if the Commission desire it.

(*Witness.*) It is purely local land, in the immediate neighbourhood of the wells, and in those cases the companies deal with the particular individuals, and endeavour to put things straight.

(*Chairman.*) We have had evidence—I do not say it is reliable—we, certainly, have had evidence from people in Hertfordshire that the injury is pretty extensive.

(*Witness.*) I do not think there are any actual facts which have been given.

(*Chairman.*) Oh, yes; plenty of actual facts of wells which have been dried up.

(*Witness.*) In the immediate neighbourhood of our wells, as I say, but not outside that.

23,037a. (*Mr. Mellor.*) My difficulty is, that if that is so, why do you object to their having this information that they are asking for? They say that you ought to let them have the height of the water in your wells, and so on, in order that they may form some opinion of the state of things. Why do you so object?—I should not object to anyone having information that would enable them to form a correct opinion. As I say, if the Water Examiner had the information, it would be a different thing. But it is another thing to give these isolated facts, which would be most misleading, unless you knew the circumstances of the case. We find it so ourselves. We draw inferences from a few facts, and we have very often to revise our conclusions afterwards.

(*Chairman.*) You do not want to throw your pearls before anybody but a Water Examiner.

(*Lord Robert Cecil.*) Perhaps Mr. Francis would draw up a schedule of people whom he thinks are qualified to receive this information without dangerous consequences.

(*Mr. Pember.*) I think he would do that on a very small sheet of paper.

(*Lord Robert Cecil.*) So I should imagine.

23,038. (*Chairman.*) You contend, Mr. Francis, as I understand, that you are not draining your neighbour's wells and not lowering the Lea?—We are certainly not lowering the Lea.

23,039. And not injuring your neighbour's wells, except in the cone of depression?—That is so.

23,040. Then there are, unhappily, some facts connected with your pumping which might lead people to think that you were?—The fact is, that in a dry year the water in everyone's wells goes down. The water company are pumping, and they put the two together. That is all.

(*Chairman.*) You might as well turn round upon the other well owners and say, why did you draw that bucket the day before yesterday?

(*Mr. Pember.*) If they were in sufficient numbers, that would be justified.

(*Lord Robert Cecil.*) I agree; that is the whole point.

(*Mr. Littler.*) And, therefore, the company ought to inspect the private wells.

23,041. (*Mr. Mellor.*) I do not understand why you object to give this information, adding to it an explanation of your own?—Because the necessary explanations would be so minute and detailed and voluminous.

23,042. (*Chairman.*) And incredible?—The question would arise at once, they would say, "Are we to believe what you say?"

23,043. (*Chairman.*) Exactly?—Then what is the use?

23,044. (*Major-General Scott.*) It occurs to me to put not exactly the matter of the information to be given, but the matter of the depletion of the underground reservoirs to you in this way: Assuming that rain ceased altogether for an indefinite time, what would happen? The water would run away to the sea, would it not?—It would.

23,045. And the level of the underground water all over the district would gradually fall, would it not?—That would be so.

23,046. And if you were pumping at the same time, it would fall more quickly than if you were not pumping, would it not?—It would fall below our well in the direction in which the stream was passing. Of course, we abstract a certain amount of water.

23,047. I am referring to the whole district?—The district above we should not affect.

23,048. Assume that rain had ceased for an indefinite time; the water would run away from the whole district, would it not?—It would.

23,049. It would fall in level underground over the whole district?—Yes.

23,050. And if you were pumping at the same time, it would fall more quickly, would it not?—Not in the region above. In the direction from which the water was coming it would not. In the direction from which the water was coming it would not, in consequence of our pumping, fall either more or less slowly than if we were not pumping.

23,051. But if there is only a definite and limited quantity of water in that underground reservoir, and a certain portion is running away to the sea, and you are pumping another portion, surely it must fall more quickly—it would become exhausted more quickly, would it not?—I think not. If you are pumping out of a stream above ground, the effect upon the water down stream is, of course, obvious. The effect upon the water above very soon disappears. The friction on the sides is much greater in the case of water passing through the fissures in the chalk—the effect of pumping from an open stream would very soon disappear, and you would be in exactly the same condition a short distance up the stream, whether you were pumping, or whether you were not pumping. It would depend entirely upon the quantity of water coming down.

23,052. But you are easing the passage of the water, are you not, by pumping?—Yes, you are; but still the friction in the chalk causes the effect to die out rapidly.

23,053. Still you are easing it at the time you are pumping. Is not that the fact?—Not outside the cone of depression at all.

23,054. (*Mr. Mellor.*) Does not the suck of the pump drag upon the stream, and reduce it?—Our pumps do not draw the water directly out of the fissures in the chalk. It pours out of the fissures into a well, which forms a tank, from which we draw the water, so that the suction of the pump has no effect.

23,055. But the draught in that cone is more rapid than it is by the general fall in the district towards the sea?—Yes.

23,056. And therefore it must run more rapidly into that depression, must it not?—As soon as it arrives at the edge of the cone, then it commences to flow more rapidly, yes. But until it arrives there our pumping has no effect upon the water in the stream above.

(*Lord Robert Cecil.*) I do not know whether I may venture to make a suggestion, but, as I understand it, the whole difference between us is this: We say that there is no unobstructed flow under the clay—that it is, to some extent (we say very greatly, but for our argument it is sufficient to say it is to some extent) obstructed under the chalk. The result is, if you pump anywhere above the obstruction, or even in the middle of the obstruction—that is above the complete obstruction—you must do what has been put to Mr. Francis, increase the pace at which the water flows away from the reservoir in the chalk. If, on the other hand, it be true that there is a perfectly unobstructed flow like a stream or river above ground—a perfectly unobstructed flow under the clay—then, no doubt, it follows that you are only taking the water which would otherwise flow away. You are taking water from down stream, and not water from up stream. That is the whole difference between us. We have ventured to put in cross-examination the reasons why we think it is perfectly evident that there must be an obstruction, and, indeed, for many purposes, both Mr. Middleton and Mr. Francis admit that there is an obstruction, and we say that it is perfectly evident that the more you pump from the water the more you lower the level in the chalk. I do not know whether I have made my observation clear.

(*Major-General Scott.*) Something of that sort occurred to me, and that was the reason I put the question to Mr. Francis.

(*Witness.*) But then it is the obstruction in the chalk that has the effect of preventing the lowering of the water to any great distance. In an open stream, if you pump water out, the effect may extend for some considerable distance, because the friction of the water upon the sides is small, whereas, through the chalk the friction is so enormous, that it very rapidly dies out. As I say, it is something like a slope of one in ten.

(*Major-General Scott.*) I admit, Mr. Francis, that it is a very difficult question.

23,057. (*Chairman.*) As I understand it, you put it in this way. You say if you could put enough pumping machinery into the Thames, for instance, to pump out the whole of the water coming to Staines—pump out every drop so that there is nothing left below—you say the quantity which comes down above Staines would be just the same?—Exactly.

(*Mr. Pember.*) Only you would be bagging it all at a certain spot.

(*Witness.*) Yes, you would not affect what was coming from above.

23,058. (*Chairman.*) It comes down in the same way. But then your analogy depends upon the underground streams of water through the chalk being analogous to the flow of the River Thames?—Yes.

(*Mr. Pope.*) It is the difference between a reservoir and a stream.

(*Chairman.*) Yes, it is the difference between a reservoir and a stream. The streams through the chalk become uncommonly like a reservoir, because they are, at any rate, enclosed channels and with obstructions of all sorts at different places.

(*Witness.*) The mark of a reservoir or a cistern surely is that the water surface in it is level. Now, in the chalk, we find it is not level. It is up here and down there, and therefore we say it is not a reservoir system.

(*Chairman.*) I agree it is not a reservoir system strictly.

(*Mr. Pember.*) It is a very slow flowing stream.

23,059. (*Chairman.*) Yes. There is a stream of water through the chalk down to the lower level?—Yes.

(*Chairman.*) But there are plenty of intermediate places where it is uncommonly confined.

23,060. (*Mr. Mellor.*) As I understand, the slower the stream flows, the more probable it is that some injury will be done above?—No, the less probable.

23,061. You have given us your definition of a reservoir, which, no doubt, is a very good one. But, suppose you take a state of things in the chalk which is very nearly that, that is to say, there is a slow stream: do you think, then, that a great deal of pumping would not have the effect of lowering the level of the water up above the point at which the water is taken?—No, the friction of the water in passing through the chalk is such that it is headed up—it takes a certain inclination, and that very soon reaches to the ordinary level at which the water flows. There was a very good illustration of that in the case of some pumping in the sand. Might I just read a few words that would explain it? A notable instance of the very restricted area affected by pumping in a porous stratum occurred about the year 1838 in the case of the Kilsby Tunnel, near Rugby, which was formed through sand so highly charged with water as to be really a quicksand. Shafts were sunk and steam pumps erected in the line of the tunnel. Robert Stephenson, who carried out the work, writes (Report to London and Westminster Water Company, 1841): "The simple result of all the pumping was to establish " and maintain a channel of comparatively dry sand " in the immediate line of the intended tunnel, " leaving the water heaped up on each side by the " resistance which the sand offered to its descent to " that line on which the pumps and shafts were " situated. The result of observations carried on for " two years led to the conclusion that no extent " of pumping would completely drain the sands. " Borings put down within 200 yards of the line of the " tunnel on either side showed, further, that the water " level had scarcely been reduced after 16 months' " continuous pumping at the rate of 1,800 gallons per " minute. In other words, the cone of depression did " not extend much beyond 200 yards away from the " line of the pumps." That was Robert Stephenson's experience. Now, it is perfectly clear that water does

not flow so freely through the ordinary fissures of the chalk as through sand, and, therefore, the range of the cone of depression would not, as a rule, be so large in the chalk as in sand.

23,062. (*Mr. H. W. Cripps.*) Can you tell me, as to your deep wells in Hertfordshire, do they go right through the chalk down to the Green sand?—No, they only go into the upper chalk.

23,063. Because some of the wells not very far from there, at any rate, in the chalk district, go right through and find an abundance of water in the Green sand?—In Bedfordshire, but the chalk is too thick and the Green sand too attenuated under our district to enable us to do that.

(*Lord Robert Cecil.*) I will put this to you. Do you say that under no circumstances is it possible to reduce the general level of the water in a porous stratum?

(*Mr. Mellor.*) By means of the pumping, I suppose you mean?

(*Lord Robert Cecil.*) By means of the pumping. (*To the witness.*) Is that what you say, or not?

(*Chairman.*) Not above the pumping.

(*Lord Robert Cecil.*) I am assuming for my purposes a closed vessel—absolutely closed. If there is anything in his cone of depression argument, he must go as far as that.

(*Chairman.*) No, certainly not. He compares the bit of water in the chalk to a slow creeping river with an escape into the Thames or into the sea, or somewhere down below, and with a supply fed from above.

(*Lord Robert Cecil.*) Yes.

(*Chairman.*) Therefore, the moment you put to him the suggestion of a basin of any sort, you are wide of his mark. He rejects the basin.

(*Witness.*) They are assuming the basin.

23,064. (*Lord Robert Cecil.*) If what he has read just now comes to anything, it comes to that—that however great the pumping, the depleting effect will not extend beyond the cone of depression?—Here is a fact. This is what Robert Stephenson said.

(*Lord Robert Cecil.*) I do not care a bit what Robert Stephenson said, for he is not here for me to cross-examine.

(*Chairman.*) I do not understand what Robert Stephenson has said; it has produced no impression on my mind.

(*Mr. Pember.*) It is clear enough, I think, my Lord.

(*Chairman.*) No, I do not think it is at all clear.

(*Mr. Pember.*) I do not say whether it is true.

23,065. (*Lord Robert Cecil.*) I want to know what Mr. Francis says. Does he say, in point of fact, however much you pump in a porous stratum, you will never produce depletion beyond the cone of depression; that is what I want to know?—On the lower side?

23,066. Never mind about the lower side or the upper side?—Then I will say yes and no.

(*Chairman.*) You must mind, Lord Robert; that is the whole point.

(*Mr. H. W. Cripps.*) Your argument is all one way.

23,067. (*Chairman.*) You would admit, if you pump out of a basin at any point, you lower the level in the whole basin?—Of course, if you have a basin.

(*Lord Robert Cecil.*) A basin filled with porous stratum?

(*Chairman.*) Yes, as porous as you like, or as impervious as you like.

(*Lord Robert Cecil.*) Let us go by steps. That is the explanation of the depression under London, I presume?

(*Chairman.*) No.

(*Witness.*) By depression I mean to say that the chalk has been depressed to a much lower level.

23,068. (*Lord Robert Cecil.*) You do not mean anything of the kind. You mean the level of the water in the chalk has been depressed?—No, I mean the chalk has been depressed. I say the surface of the chalk is depressed, and forms a hole.

23,069. You are surely not going to be the only engineer who denies that there is a depression in the water level under London?—That is another thing. You mean a fall of water under London. There is

Mr. J. Francis. that, too. Only we have used the word "depression" in two senses.

24 Jan. '99 23,070. We will avoid the word "depression" in future. The general level of water under London has sunk?—Yes.

23,071. That must be because you are pumping more water out of that part of the chalk than is coming into it?—Out of that particular part of the chalk, yes.

23,072. If you are doing the same thing in Hertfordshire, you are making a depression of the level in Hertfordshire?—Around the well, yes.

23,073. Not around the well, but generally?—Not above the well.

23,074. Why not? If you do it in London, why not in Hertfordshire?

(*Major-General Scott.*) I think it simplifies it if you assume no rain is coming in.

(*Lord Robert Cecil.*) Certainly.

(*Mr. Pember.*) Then you have got a reservoir.

(*Chairman.*) No.

(*Major-General Scott.*) You may have a temporary stream; in fact all rivers would exhaust themselves in the same way; they would go on running for a certain time, but if there was no rain they would dwindle away. It is exactly the same with the fissures in the chalk; if there were no rain, the water would go on running through the fissures till it exhausted itself, and the whole level of the underground water would fall. That Mr. Francis, I think, has admitted.

(*Lord Robert Cecil.*) Yes.

(*Witness.*) What I understand is, you are suggesting that the effect of the cone of depression on pumping by a well extends indefinitely up the stream.

23,075. (*Lord Robert Cecil.*) On both sides everywhere?—Then it is a fact that it does not.

23,076. I do not know whether I shall gain anything by putting the matter over and over again, but it does do so under London?—Under London it is a different question altogether.

23,077. What is the difference?—The water there is boxed in between the London clay and the lower chalk. It is a different question altogether. There is only a small channel for the water to pass through towards the sea.

(*Mr. Littler.*) One is, practically, a reservoir, and the other is not.

(*Lord Robert Cecil.*) Neither is a reservoir. It is fatal to Mr. Francis if he admits either is a reservoir.

(*Chairman.*) No.

(*Mr. Pember.*) London is much more like a reservoir; it is much more boxed in, only there is a small hole in the box.

(*Chairman.*) I do not think he says that. He says that the access of the water into the parts of London where there are wells is so restricted and compressed by the overlying clay that the water cannot come in as fast as it is pumped out, so that you get something analogous. But what I was suggesting was the Thames wholly pumped out at a particular spot.

(*Witness.*) I think this wants explaining. With a map perhaps I could make it clear.

23,078. (*Chairman.*) Have I put accurately what you mean?—Not exactly, my Lord, because the pumping is concentrated—the pumping under London. You must distinguish between the London clay and the clay under London. The clay under London covers a very much smaller area than the London clay.

23,079. Is not the clay under London London clay?—The London clay and the clay under London are two different things. This is the whole of the London clay. The clay under London is *here*. Just *here* the pumping that is concentrated upon *that* area is having the effect of depressing it *here*. But there are vast quantities of water passing under *here* where the water level is not depressed by pumping (*describing the same*).

23,080. You have got to account for the depression of the level in the places where they are pumping?—The small quantity of water passing through here is not sufficient to affect it. The water that passes here cannot get from either direction towards that point. The water is passing in a vast broad river right through in that direction towards the Thames and to

the sea, and at certain parts of it the water is intercepted by a great deal of pumping, and so there is a depression. At other parts it is undepressed.

23,081. According to your theory the northernmost of the London wells, ought not to have its level depressed at all, because by the hypothesis it cannot be affected by the wells below it. That cannot depress the level higher up in your underground river, and therefore the northernmost of these wells had to keep the same level?—The northernmost of our wells is affected by pumping from the neighbourhood—from within a mile or two—there are other wells and they have the effect of depressing the water level.

23,082. Unless there are wells above it, according to your theory it ought not to be affected at all. The northernmost of the wells—the one that is highest up on the underground stream—ought not to be affected in the least by any amount of pumping below it?—Under the tertiaries the cone of depression formed by pumping in a well extends much further than in a case of—

23,083. So be it. But if there is any well that is beyond any cone of depression of any lower well, that well ought not to have its level affected in the least?—Our wells are within the cone of depression of other wells.

23,084. (*Lord Robert Cecil.*) I do not like to say anything severe about Mr. Francis, but he really is getting away from the hypothesis with which he started. He is now saying that the depression is not due to the general lowering of the level of the water under London, but due to the cone of depression of some neighbouring well, and that is a position, I believe, which he will find no engineer supporting. Do you find any engineer who supports that?—Underneath London, at just the small locality where the pumping goes on, the cones of depression of the wells overlap each other.

23,085. (*Mr. Pember.*) It becomes a common cone of depression—all under it?—That is so. They are so close to each other that they affect one another.

(*Lord Robert Cecil.*) That is a wholly different statement to the one we began with.

(*Chairman.*) I repeat that if there is any truth in your theory, the northernmost of those wells ought not to have its level lowered at all.

(*Witness.*) Unless it is within the cone of depression of another well.

(*Chairman.*) Unless it is within the cone of depression of another well.

(*Witness.*) That is so.

23,086. Have you examined the condition of the wells. Which is the northernmost?—The one at Enfield is the northernmost, and that is but very slightly affected indeed—not to the same extent as under London. I do not mean to imply at all it is affected to the same extent as the wells under London. The water line varies very slightly, but we can detect it there—that is all I mean to say, and the Enfield Local Board have wells, and there are breweries and other establishments up the Lea Valley, and we are within the cone of depression of those wells.

23,087. (*Sir John Dorington.*) Is there any theoretical diameter given to the surface of this cone of depression?—I do not think it is prudent to give any hard-and-fast line. In some cases the chalk is more broken up than in others, and extends further than in other cases.

23,088. Within the limits of one half a mile or three miles, or anything of that sort?—I do not think it often extends beyond a quarter of a mile from a well—very rarely. Springs have been flowing all this summer within a quarter of a mile of our wells. We have not touched them.

23,089. (*Mr. Mellor.*) Then, Sir John Dorington's question would be answered if you said half a mile would be the diameter of the cone of depression?—I would rather say a quarter of a mile.

23,090. (*Chairman.*) The diameter?—The diameter.

23,091. (*Sir John Dorington.*) To the base of the cone which, of course, is the uppermost point?—I beg your pardon, the diameter would be half a mile.

23,092. (*Lord Robert Cecil.*) What is the nearest considerable well to your Hoe Lane Well?—I think the Enfield Local Board Well.

23,093. How far is that?—It is about two miles, I think.

23,094. Therefore, in that case, if your amended theory is right, the cone of depression must be about two miles and a half.

(*Chairman.*) Do not say "amended theory"; I have not noticed any amendment.

(*Lord Robert Cecil.*) I submit that the first theory was that there was a general lowering of the level of the water under London, quite apart from the cone of depression. That is what I understood Mr. Francis to say at first.

(*Witness.*) That is the effect of it.

23,095. You do say that?—Yes, that is so; that is what actually occurs. All over London there are so many wells that, as Mr. Pember has said, they form one cone of depression. They overlap and the general effect has been to lower considerably the water level under London; as you get to the outskirts, the effect is very much less.

23,096. The net result must be that the water is being taken out of the chalk under London quicker than it is coming in?—Yes.

23,097. That must be the net result. Then if that is so, the flow of the water in the chalk under London must be very slow compared with what it is in the chalk not under the London clay?—I suppose so.

23,098. Do you admit that?—I do not know exactly what you mean by slow. It is a very vague term.

23,099. It must be slower than it is in the bare chalk?—Yes.

23,100. Then does it not follow, that since the only path from the chalk of Hertfordshire to the sea is under the London clay, there must be a restricted flow from the chalk of Hertfordshire to the sea—the underground flow?—All the water gets away, whether restricted or not.

23,101. I suggest to you that some of it goes under; we say a very small quantity goes under the clay, and the rest of it comes out on the stream?—No.

23,102. It overflows into the stream?—We know that all round the Essex coast, both on the Thames and in the sea, there is a constant flow of water.

23,103. Where?—That is proved by the fact that any well sunk within a short distance, or in some cases, a considerable distance of the shore, gives brackish water when pumping is going on. That proves that there is communication with the sea to give the salt. It proves that there is communication with the fresh water in order to dilute the salt water and make it brackish.

23,104. Does it not conclusively prove that there is a very slight flow of fresh water and a relatively considerable flow of salt water back into the well?

(*Mr. Pember.*) No.

(*Witness.*) No; it proves that there is an open communication.

23,105. (*Lord Robert Cecil.*) I was not aware of this fact. It seems to me important. How far is the farthest of your brackish wells from the sea coast?—I think there is an instance of one in Essex, 17 miles away, but that is very exceptional.

23,106. Do you know how much is pumped from that well?—No, I do not.

23,107. Can you give us any kind of idea?—I really cannot.

23,108. A small quantity or a large quantity?—I do not know. I really do not remember what quantity is pumped from the well. There are a number of instances round the coast of Essex where that is the difficulty in getting water.

23,109. This is a very important fact. It is a fact which was quite unknown to me, and it seems to me of immense importance in view of what you are setting up, if pumping a relatively small amount of water from a well 17 miles from the sea coast is sufficient not only to stop the flow of fresh water into the sea, but to draw the salt water back.

(*Chairman.*) He has not said that in the least.

(*Lord Robert Cecil.*) It must be so.

(*Chairman.*) No salt water comes in with the tide.

(*Lord Robert Cecil.*) But it comes in 17 miles.

(*Chairman.*) Yes.

(*Lord Robert Cecil.*) You cannot have water flowing both ways.

(*Chairman.*) No, but you have a constant influx of fresh water into the stratum in which the well is dug and an equal influx from the other side of tide water when the tide is high enough and the two mix and make brackish water.

(*Lord Robert Cecil.*) Your Lordship will see in a moment that the flow of fresh water must be exceedingly slow.

(*Chairman.*) I do not see that in the least.

(*Lord Robert Cecil.*) I should submit it is perfectly clear. You have a pipe going into the sea; you have fresh water going down that pipe. It is filled with fresh water.

(*Chairman.*) Filled or partly filled—yes.

(*Lord Robert Cecil.*) Therefore, if there is anything in his theory, it must be filled.

(*Mr. Pember.*) One sees at a glance, my Lord, the effect this has on the financial aspect of purchase.

(*Lord Robert Cecil.*) I quite understand that interruption from the water companies.

(*Chairman.*) I have so much sympathy with the feelings of Hertfordshire which I know are in a tender condition, that I have not liked to stop Lord Robert, but I think he must feel—

(*Lord Robert Cecil.*) I do not wish to press the matter further. We are very anxious not to be prejudiced by anything that may happen before this Commission. That is the point.

(*Chairman.*) We will safeguard your feelings.

(*Lord Robert Cecil.*) After that intimation I do not think that I should be justified in taking it any further.

23,110. Can you give us any information, Mr. Francis, about that well 17 miles from the coast?—I am afraid I do not remember the name of it at the present moment.

23,111. Can you put us on the track of it?—Yes, I think so, no doubt I could.

(*Mr. Littler.*) There was a table that I proposed to put in at Question 21,293, with regard to some comparisons of charges in Middlesex, and your Lordship wished us to verify the figures with the London County Council beforehand. The London County Council of course do not accept the value of our figures, but they are now agreed that they are accurate, so that I will now hand the table in. They are the comparative figures of all the companies and district councils in Middlesex, showing the differences of charges. Your Lordship will see the heading: "Table showing the difficulties of assimilation of charges in the county of Middlesex." Now that the figures are agreed to be accurate, with your Lordship's permission, I should like it to go upon the notes.

(*The table was handed in. See Appendix I., 4.*)

(*Mr. H. L. Cripps.*) I think at present that paper must not be handed in by Mr. Littler as agreed to by the London County Council.

(*Chairman.*) If you say that, I will hand it back.

(*Mr. Littler.*) It is really too bad, the County Council have had a fortnight for the purpose of examining this. It has been examined by Mr. Gomme, and he has accepted it under his own hand.

(*Mr. H. L. Cripps.*) I have had no information on that point.

(*Mr. Littler.*) Do you not accept the figures?

(*Mr. H. L. Cripps.*) Not as representing the London County Council.

(*Mr. Littler.*) It is really too bad. You have wasted a whole fortnight over it.

23,112. (*Mr. Pember.*) One of your honourable colleagues asked me if I would hand in, so far as I could the demand notes of some of the companies, with a view of showing that each consumer did know exactly how he was charged, and what the rates were that he was supposed to be charged.

(*Mr. Bickards.*) I will hand up the Chelsea ones.

(*Mr. Pember.*) These two are East London. One refers to the part inside the administrative county and another to the part outside. Here is the Lambeth, Grand Junction, West Middlesex, and Chelsea. You

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Mr. J. Francis. will see what information the consumer gets as to the statutes under which he is charged.

(Mr. Richards.) You will see there is further information on the back of the demand note.

(Chairman.) Do you want them on the notes?

(Mr. Pember.) The only reason for putting them on the notes would be that I daresay there are a great

number of persons who think that the consumer has no notice whatever of the conditions under which he is charged, and these would show that he has.

(Mr. Mellor.) The whole of these are for domestic purposes, I notice.

(Mr. Pember.) Yes.

The witness withdrew.

See 22,508. 23,112a. *(Mr. Littler.)* Would your Lordship like to have a reference to the sections as to the power of cutting off? I have looked up the point after promising your Lordship I would give it to you on the last occasion. Your Lordship will recollect that on the last occasion a question arose as to the powers of the company as to cutting off water in case the charges were not paid, and I told your Lordship that I thought, practically, they had no power where there was a dispute. I find that is so under the Statute. I do not know whether it is worth while to give it to your Lordship.

(Chairman.) You say there is no power to cut off the supply when there is a dispute.

(Mr. Littler.) That is so. Suppose a man has not paid, and he, *bonâ fide*, disputes the amount of the charge, the company cannot cut the thing short by cutting off his water. It must continue its supply and they must go before the magistrate and have the dispute settled. That is clearly so. I will just mention the sections. They are 43rd, 68th, and 74th sections of the Waterworks Clauses Act of 1847; and it has been held by the Court of Chancery that they have jurisdiction to restrain the company from attempting to cut off the water pending the decision of the *bonâ fide* dispute before the magistrate, providing the ratepayer will undertake he will go before the magistrate at once. It is under the Act of 1887; where the rate is paid by the landlord within the Metropolis there is further limitation of their powers. They cannot, if the rate is paid by the landlord, cut off the tenant's supply. That is under the Water Companies Regulation of Powers Act, 1887. That applies only within the Metropolis, and only applies to cases where a tenant's water rate is paid by the landlord. It is a charge on the premises. But where the tenant pays his own rates, if there is any dispute between him and his water company as to the amount of his charges, the moment he gives notice of that dispute he can take them before the magistrate and is bound to take them before the magistrates: that is the only tribunal, and, of course, it is a cheap tribunal. The amount of charge is to be ascertained before the magistrates, and until that is decided the water company has no power to cut off the water.

(Chairman.) How is it ascertained that there is a dispute? Supposing I do not like my demand note, and accordingly do not pay, does that constitute a dispute, or must I have a summons issued?

(Mr. Littler.) Then what you have to do is to go to the nearest police magistrate and ask for a summons.

(Chairman.) The dispute does not arise at all till I have got the summons.

(Mr. Littler.) The moment you notify the company that you dispute it, the dispute arises, according to Haward and the East London.

(Mr. Pope.) But the Court of Chancery would not intervene unless they are satisfied there is not only a dispute but due diligence in pursuing the remedy.

(Mr. Littler.) Under the Waterworks Clauses Act, as I have said, by the 74th section, and the 64th and 43rd, taken together, that is the result of the law. Now, Mr. Cripps, are you agreed?

(Mr. H. L. Cripps.) I have a memorandum on the subject of the table which Mr. Littler has just put in, which I observe begins in this way: "This table is not only misleading, but is founded on an idea which cannot, for a moment, be seriously entertained. No, one proposes, and there is no more reason for equalizing charges in the county of Middlesex than in, say, the county of Yorkshshire or the county of Lancashire. The various urban districts in Middlesex are quite independent of each other and have very different circumstances. It is quite different in the case of London, as London is one whole, and in

"regard to 75 per cent. of its taxation, is treated as such. For instance, main drainage is one system for the whole of London, whereas in all the urban districts of Middlesex such a service is independently performed and separately charged by each of the districts. It is the same in respect of water supplies, and the idea of equalizing charges for water in London is founded upon facts relating to London, which do not obtain in the county of Middlesex. Further, Middlesex consists of both urban and rural districts, whereas London is one whole urban area. The table is further misleading."

(Mr. Littler.) I do not know why my friend should make a speech upon the subject.

(Mr. H. L. Cripps.) Mr. Littler has rather put it to me that this matter had been agreed with the statistical officer of the London Council Council, and I am reading the report again upon it, that is all.

(Mr. Littler.) It was only a question of agreeing to the figures. I daresay you think they are all folly, you always do. Now I think that is the only objection.

(Mr. H. L. Cripps.) We will put in these observations at the same time.

(Chairman.) Why is it misleading to know what the charge is upon a house of a certain rateable value?

(Mr. Littler.) It is the fact and those are the charges.

(Mr. H. L. Cripps.) I only quote this because Mr. Littler seemed to imply that it had been agreed to.

(Chairman.) You know those cases better than anybody, and if you tell me why it is misleading, then I will read it with a suspicion in my mind.

(Mr. H. L. Cripps.) To begin with, it refers to houses of three particular rateable values—17l., 18l., and 19l.

(Chairman.) That appears on the face of it.

(Mr. H. L. Cripps.) That gives it the appearance, as Mr. Gomme suggests, of a comparison of London companies with the non-London companies and local authorities in the county supplying water, whereas it does not afford really any such comparison.

(Chairman.) You mean that if you get the 80l., 90l., and 100l. houses, the results might be different.

(Mr. H. L. Cripps.) Exactly.

(Chairman.) That, of course, is obvious on the face of it.

(Mr. Littler.) Your Lordship sees the results there show the difficulty of assimilating in Tottenham, where you have the East London charging one scale and the New River charging another, and the Tottenham District Council charging more than double either of them.

(Mr. H. L. Cripps.) We shall be very glad indeed for London to agree with the county of Middlesex, the actual figures about which there can be no dispute, about all these charges and rateable values; but this is a table which simply has the appearance of being a comparison and is quite misleading because it only relates to three houses.

(Mr. Littler.) That does not bear on the question of the accuracy of the table.

(Chairman.) It is only put in as a schedule of charges of water companies and authorities for houses of 17l., 18l., and 19l. assessable value. If you like to complete it by putting in the charges of houses of 40l., 60l., 80l., and 100l., we shall be glad to see your figures.

(Mr. H. L. Cripps.) We have corrected for Mr. Littler the original figures as regards these three classes of houses, and I think it is now right as regards those three rateable values.

[Adjourned to Monday next, at 12 o'clock.]

FORTY-SEVENTH DAY.

Monday, January 30th, 1899.

Guildhall, Westminster, S.W.

PRESENT :

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
 Sir JOHN EDWARD DORINGTON, Bart., M.P.
 Sir GEORGE BARCLAY BRUCE, Knt., C.E.
 ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
 HENRY WILLIAM CRIPPS, Esq., Q.C.
 ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.
 Mr. Littler, Q.C., and Mr. Lewis Uoward appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
 Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

23,112b. (*Mr. Balfour Browne.*) Before the proceedings commence may I just say one word, I understood from the evidence given by Mr. Groves, at Question 21,998a, that he was, in some sense, appearing for the Thames Conservancy. He stated, "I speak, as you know, as the chemist to the Thames Conservancy." Then in your Lordship's examination, at Question 21,999, you asked "You say you are chemist to the Thames Conservancy." I did not understand at all that Mr. Groves really came to represent the Thames Conservancy before your Lordship.

(*Mr. Pope.*) No, I do not think he expressed any opinion on the part of the Thames Conservancy.

(*Mr. Balfour Browne.*) It did mislead some of us. It misled me at the time, and I thought he was coming here with the sanction of the Thames Conservancy to speak for them; but I do not think that is so.

(*Mr. Pope.*) Not to speak for them, because he gave no opinion of any kind; he simply stated facts, which he had acquired in his position as their chemist.

(*Mr. Balfour Browne.*) I think he gave opinions. However, if that is understood, I am satisfied.

SIR ALEXANDER BINNIE recalled, and further examined.

23,113. (*Chairman.*) We were to recall you upon any observations you might have to make as to the drought of last year. We will take the River Lea first. What does the future supply from the River Lea depend upon, in your judgment?—On three factors, the flow of the River itself, the quantity taken from the river for supply of the Company of its district, together with the quantities sent down for navigation, and the total capacity of the storage on the Lea.

23,114. I believe you have got a diagram of the actual flow of the Lea from August, 1897, to the end of 1898?—I have, if you will allow me to put it in.

(*The Witness handed in Diagram H. See "Maps, Plans and Diagrams."*)

23,115. I do not quite remember where Fieldo's Weir is?—It is above the intake of the East London Company, and below that of the New River Company.

23,116. Then I see on your diagram the red line shows what was left in the Lea after the New River Company had taken 22½ million gallons?—That is so.

23,117. From the quantity of water left in the Lea after the New River Company had helped themselves, I suppose you must first deduct what is required for navigation, namely 5·4 million gallons per day?—That is so. That is a constant charge on the river.

23,118. And then what is left must supply the East London Company—22½ million gallons is it, or 20?—In the statement before Lord Balfour's Commission it was stated as 30, if you will recollect, my Lord. The 30 millions drawn by the East London Company, added to the 22½ is the 52½ million gallons which Lord Balfour's Commission said could be drawn from the Lea with proper storage.

(*Mr. Pember.*) What my Lord asked you was this. After the navigation of the Lea has been satisfied, what is the amount that the East London may take.

(*Chairman.*) Yes, I forget whether it was 22½ or 20½.

(*Mr. Pember.*) 22½ millions, I think.

(*Witness.*) I think I am correct.

(*Chairman.*) First the quantity of 22½ millions.

(*Mr. Pope.*) For the New River Company?

23,119. (*Chairman.*) No for the East London. Then if there was any surplus the New River and the East London divided it between them?—Yes.

23,120. I forget what is the fixed quantity for East London?—I do not think there is any fixed quantity. The East London told Lord Balfour's Commission that they could take 30 million gallons, but I am not aware that there is any fixed quantity at all, as they claim the whole river.

(*Chairman.*) Yes, I think there is in their Act of Parliament.

(*Mr. Balfour Browne.*) Not for the East London, my Lord, I think.

(*Mr. Pember.*) I knew there was, though people contradict one so. Clause 30 of the Act of 1855 first gives the right of trustees to take a certain quantity which we know; secondly, the right of the New River to take 2,500 cubic feet a minute, which works out at 22½ million gallons per diem. Then the right of the East London to take 2,500 cubic feet a minute, which works out of course at the same sum, 22½ million gallons per diem. Then comes fourthly the right of

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Sir A. Binnie. each of the two companies to take *pari passu* 500 cubic feet.

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(Chairman.) Yes, I knew that was so.

(Mr. Pember.) But which they never took.

(Mr. Balfour Browne.) That is not the limit. They get the whole really.

(Chairman.) Yes, but then that applies equally to the New River. Each has got a fixed quantity given to it, and then half of the whole surplus if there is any.

(Mr. Balfour Browne.) I find the Water Examiner's Report reads in this way, "From the Lea unrestricted."

23,121. (Chairman.) In one sense it is accurate. (To the witness.) Now your diagram shows that in 1898 the flow of the river after the New River had taken its 22½ million gallons was not sufficient for navigation on some days?—On some days during the drought of this last summer and autumn it was not so.

23,122. There was not enough to give 5½ million gallons for the navigation?—That is so.

23,123. It may be that the navigation did not need it?—It was pumped up. We had it in evidence.

23,124. What quantity on the average was there left for the East London Company after the New River Company had had its first draught, and after the navigation had been satisfied?—I could not say, my Lord. I have not taken the figures out exactly in that way.

23,125. What are we to infer from this diagram?—That being the red line showing the flow of the Lea, I come next to the question of storage. At the present time the East London Company have got reservoirs of a total capacity of 1,200 million gallons, I think it is.

23,126. (Mr. Balfour Browne.) 1,210?—1,210 is the quantity that they have actually constructed and working; and under their Act of 1897, they have power to construct 1,015 million gallons more. I have assumed on this diagram that both those quantities, amounting to 2,225 million gallons are constructed, working, and were full at the beginning of August 1897, as shown by the green line.

23,127. What then?—From that I have deducted not 30 million gallons a day for the supply of the East London Company, but the average quantity of water which they took from the Lea in their reservoirs in the six years 1892-1897, which amounts to 32½ million gallons practically—32,498,697 gallons. There have been parts of those times when they did not get the full supply for their district; but I take it without any increase whatever for future population at that amount—32½ million gallons.

23,128. Do you mean that that amount of 32½ million gallons is the average of what they have actually drawn during the six years from 1892-1897?—That is so.

23,129. Then we must remember that during those years they had not got this reservoir capacity?—They had not.

23,130. And therefore, they were drawing more from the Lea than they need have drawn, if they had had their reservoirs at that date?—I can hardly say that. Those are the actual quantities they did draw from the Lea in those years. But I am going to show what they could have done with the aid of these large reservoirs in a season like the past.

23,131. Will you show us that now?—To the 32½ million gallons I add 5·4 million gallons the navigation quantity, which gives 37·9 million gallons a day, a constant draught on the reservoirs; and if they took every drop of water that came down the river, including all the floods—and your Lordship will notice there are only three floods on the diagram—the reservoirs would have been empty on the 30th May 1898. There would have been a deficiency of storage to make up, on the 6th December, of 5,308 million gallons, and at the end of the year, 31st December 1898, a deficiency of 5220·9 million gallons.

23,132. To get those deficiencies, what do you assume they are drawing from the river every day?—32½ million gallons for the town, and 5·4 million gallons for the navigation.

23,133. Then there are some days when that quantity was not going down the Lea?—No.

23,134. You say that is the average?—I am saying 5·4 million gallons would have been given out of the storage. It would require all this storage to have enabled them to give those quantities.

23,135. Go on, Sir Alexander; what is your inference?—One remarkable fact on the diagram I want to point out, is the fact that there are only three floods.

23,136. In what period?—In the 17 months extending from the 1st of August, 1897, to the 31st December, 1898.

23,137. Which do you call the three floods?—The first flood is on the 6th, 7th and 8th January, 1898 which amounted to 113 million gallons. You will see it is a somewhat blunt peak over the word "January." Then there was another flood on the 28th of March, 1898, which ran up to 198·4 million gallons. There was a flood on the 7th and 8th December, 1898, amounting to 166 million gallons.

23,138. A day over Fields's Weir you mean?—A day over Fields's Weir.

23,139. That is after the abstraction of the New River Company's water?—After the abstraction. This fully confirms the late Mr. Greaves' evidence before the Duke of Richmond's Commission (Q. 5131), on the 6th June 1867. He said that the East London Company in 1864 took the whole volume of the river, and there was nothing went by; and in reply to Question 5178, before the same Commission, he says that the winter of 1858 went off without a single flood.

23,140. I think that you said that the reservoirs of the assumed capacity that you have mentioned, namely, 2,225 million gallons, would have been empty?—On the 30th of May 1898.

23,141. Then what deficiency would there have been in the storage up to the end of the year?—At the end of the year there would have been a deficiency of 5220·9. The total deficiency during the year would have been 5308 on the 6th December.

23,142. And at the end of the year you say that the deficiency of the reservoirs would have been 5220·9 million gallons?—Yes.

23,143. That means, therefore, that the East London Company ought to have had that additional reservoir capacity to satisfy the wants of their district?—Under those assumptions.

23,144. That is under the assumptions that the New River Company take 22½ million gallons, and that the navigation gets its 5·4 million gallons every day?—That is so.

23,145. What are we to conclude from that?—Looking to the future, and taking into account the inevitable increase of population in the East London Company's area, the Lea is, for all practical purposes, exhausted, and to construct in it further reservoirs of larger capacity would only lead to a wasteful expenditure of money, that is to say, you would have to make these big reservoirs of this 5,000 and odd million gallons to provide against a very remote contingency. It is a wasteful expenditure of money in that sense—that you had better go to some other source which is more bountiful. You have got so near to the end of the possible supply from the Lea.

23,146. Of the possible supply from the Lea in such years?—In such years as 1898, and such a year as 1898 does not occur very frequently, of course.

23,147. We have not had anything like it for 80 years?—When we come to the Thames you will see my remarks on that. It is not the whole year—it is a certain period of the year that was so exceedingly dry. Now, as it will take some years to construct the additional 1,015 million gallons of storage authorised by the Act of 1897, quite apart from this larger storage, which is deficient, I have come to the conclusion that in any dry season for many years to come the East London Company will have to be assisted from the Thames.

23,148. And you say in this calculation you have not taken into account any possible increase of the population?—No, I have taken it merely at the figures of these six years past up to 1898.

23,149. So that if there was an increase of population, the condition of things you have just described would be aggravated?—It would be aggravated and occur at an earlier date.

23,150. (Mr. Mellor.) As I understand, you have not taken the present amount of population; you have taken the average?—I have taken no population at all. I have taken the actual quantities of water drawn in 1892, 1893, 1894, 1895, 1896, and 1897, which do average 32½ million gallons—varying from 30½ million gallons in 1894 up to 36,600,000 in 1895.

23,151. But, in speaking of the population, what population do you take—the population of 1898?—I take no population. I take the mere quantity of water they have actually drawn; and that quantity of water was for the supply of the then existing population in those years.

23,152. (*Chairman.*) In effect though, your calculation does take into account any increase of population there may have been between 1892 and 1897?—Yes, up to that point.

23,153. You take it into account in the shape of the annual supply?—Yes, you may say that I take into account the present population without looking to the future.

23,154. (*Mr. Mellor.*) That is to say, you assume the present population to be constant for your calculation?—That is so. Or rather, I will put it in this way: I assume that the quantity of water required for the present population is constant. That is the more correct way of putting it.

(*Mr. Balfour Browne.*) Your Lordship will see that the last year, 1897, was close upon the average of the whole.

(*Chairman.*) Yes, I see that. I was just going to observe it. It is a little higher than the average.

(*Mr. Balfour Browne.*) Yes, but not very much.

(*Chairman.*) On the other hand, the year 1896 was a good deal below the average.

23,155. Then I may sum up what you have just said by saying that you think it is not worth while to attempt to make the supplies from the Lea come up to the requisite amount by means of storage?—By means of storage.

23,156. It is an extravagant way of doing it?—I think it is an extravagant way of doing it.

23,157. That must all depend upon whether there are other less extravagant ways?—Yes, certainly.

23,158. And of course your solution will be, we know, the mountain?—That is an ultimate solution. But I am looking here to the next few years before Wales could come into operation, or before even the Staines Scheme could come into operation. For some years to come if there was a dry year like this last, or anything approaching it, a further draught would have to be made from the Thames.

23,159. (*Major-General Scott.*) You do not assume that the construction of reservoirs to the sanctioned amount would be extravagant, do you?—No, I think they are absolutely necessary. This diagram, in fact, shows that they are absolutely necessary.

23,160. (*Chairman.*) If we are to take the whole of the experience of this year into consideration, the needs of the East London Company have been more or less supplied by aid from other companies?—They have.

23,161. And if a complete system of inter-communication is made, those needs can be supplied in a similar season, in the future?—They can.

23,162. And in a less expensive way than making this enormous storage capacity?—Yes.

23,163. So much for the poor Lea. Now what have you to say about the Thames?—Your Lordship will recollect that in May last I placed before the Commission—at Questions 9228 and 9321—a series of diagrams and tables, and estimates. I do not propose, upon the present occasion, to weary the Commission by putting all those in again. But I have selected three of the diagrams, which are crucial ones, and I have revised them on the basis of the conditions of 1898, and they will show at once how my views have been altered by the state of affairs of last year. They are Diagrams E, F, and G, and they show the working of the Staines Reservoirs Scheme in such a year as 1898, supplying 185½, 300, and 400 millions gallons per day respectively, with a minimum flow of 200 million gallons over Teddington Weir. Taking Diagram E, to begin with, your Lordship will notice that it is made out similar to the other ones that you had before you, showing the actual flow by a red line; the resultant flow on the river, after the 185½ million gallons, are taken by the blue line and the capacity of the reservoir by the green line. The portions hatched in blue at the beginning and end of the diagram show the floods which come down and which I do not take for 15 days after it has risen to 2,300 million gallons.

(*The Witness handed in Diagrams E, F, and G. See "Maps, Plans and Diagrams."*)

23,164. (*Sir John Dorington.*) The flood assumptions are the same as in your previous diagrams?—The assumption as to the exclusion of floods.

23,165. I say the flood assumptions are the same?—Yes. The first thing that your Lordship will notice upon this diagram E, that from the beginning of the year down to almost the end of November there was only one flood to deal with. That was the flood that occurred in the first nine days of last year; and whether we took that flood in or did not take the flood in, it would make no difference whatever to the diagram, as it would only have the effect of filling up that little depression in the storage of the reservoir which occurred just about that period early in January.

23,166. (*Chairman.*) The reservoirs remained full, as I understand, from the 21st January to the 4th July?—To the 2nd July.

23,167. Please go on explaining your diagram?—You Lordship will notice that the Thames would be reduced to 200 million gallons a day for 135 days, extending from about the 2nd July right through with one or two little exceptions, up to November 22nd or 23rd. During that period the average natural flow of the river was 259·2, and the average natural flow of the river from the beginning of the year, including floods in January up to the 30th November, only amounted to 664·1 million gallons.

23,168. That is half the average that was deduced from former years?—From former years.

23,169. It was 1,300 million gallons odd?—Yes. I am only dealing with it, as your Lordship will notice, from the beginning of the year up to the end of November, because it is within those months that the crucial period occurs of dry season. The lowest point to which these reservoirs could fall would be on the 17th of October, when they would only contain 30·3 million gallons.

(*Mr. Pember.*) Just tell us what the natural flow of the river would be at that moment.

(*Mr. Balfour Browne.*) It is shown in pink.

(*Chairman.*) About 300 million gallons.

23,170. (*Mr. Pember.*) I cannot see whether it is three or four?—It is about 300 million gallons.

23,171. (*Chairman.*) It is a little over rather than under. Have you finished that diagram now?—Yes, my Lord, excepting for the fact that I would point out what the capacities of the reservoirs are. The gross capacity of the reservoirs is 18,000 million gallons, and that is the capacity shown upon the diagram. Then from that I made the deduction of 2,000 million gallons for cleansing, and 2,000 million gallons for bottom impurity and evaporation. Deducting those 4,000 million gallons I get 14,000 million gallons—the net quantity shown on the diagram.

23,172. (*Mr. Pember.*) Then this condition of things is presumed upon the reduction of the 18,000 down to 14,000?—Yes, the 14,000 is shown upon the diagram.

(*Mr. Pember.*) Where do you get the initial figure of 18,000 from?

23,173. (*Chairman.*) Oh, that is his original figure?—That is my figure; that is not your figure at all.

23,174. (*Mr. Pember.*) I quite understand it, and that is the storage that you put down for how many million gallons to be withdrawn from the Thames?—185½.

23,175. (*Chairman.*) That, I think, is your former figure?—That was my former figure.

23,176. You have only shown what modified results are the consequence of the drought of last year?—Yes, of course your Lordship understands that the 18,000 million gallons is a very large increase of storage compared with the corresponding diagram and the corresponding estimate B that I put in on a former occasion.

23,177. Where are we to look for your estimate B?—It was put in at Question 9321. Then your Lordship will notice that the total storage was 8,000 million gallons.

23,178. Yes, but then the diagrams do not proceed upon the same assumptions. Now, you proceed upon the assumption of 18,000, instead of 8,000 million

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A. Binnie. gallons in the reservoir?—That is the only difference in the diagram.

30 Jan. '99 (Mr. Balfour Browne.) Because of the drier period that he has to deal with he has to give a larger storage.

(Chairman.) I am not in the least finding fault. I am only trying to get it clear in my mind.

(Mr. Balfour Browne.) That is the reason.

(Witness.) The next diagram, my Lord, is the one marked "F." It is a diagram showing the working of the Staines Scheme under the usual conditions that I have previously described, when 300 million gallons are drawn out, and a minimum of 200 million gallons over Teddington Weir is preserved.

23,179. (Sir John Dorington.) Raising the supply of London from 185½ to 300 million gallons a day?—That is so.

23,180. (Chairman.) How much do you take the capacity of the reservoirs to be in this diagram?—In the E. diagram they will have a net capacity of 28,500 as compared with a former net capacity of 20,000 million gallons.

23,181. Explain your diagram F please?—The diagram is exactly the same as the other one, the only difference being that the storage capacity being larger, it would be full up to the 15th of June, empty on the 17th of October and on the 28th of November. The river would be drawn upon for 337 days, and there would be 174 days during which the flow would be reduced to 200 million gallons a day as compared with the natural flow during that period of 316½ million gallons.

23,182. Are we to infer from that that the supply to the population would fail when the reservoirs are empty?—No; it will be just empty, that is all; there would be no deficiency.

23,183. What then?—Nothing particular would happen. Your Lordship sees that in October, owing to the increase in the flow of the river, it rose again, and it fell again. They were just empty on those days towards the end of the year.

23,184. (Major-General Scott.) There was water in the river available?—There was water in the river available to carry on the supply.

(Mr. Pember.) And that would be true of the other diagram also—diagram E.

(Witness.) I am assuming that all that surplus water is taken into the reservoir. You will see at once in diagram E, that from the 16th of October to the end of the year the quantity of water in the reservoirs was continually rising. In the same way I am taking in all the surplus water when it was running at 300 millions and storing it in the reservoirs. You see it rises and falls up to the end of the year.

23,185. (Mr. Pember.) I understand you to answer the noble Lord that there is always water to carry on the business with?—Assuming that capacity of reservoirs, there is always water to carry it on.

23,186. (Mr. Balfour Browne.) But not without that storage?—Not without that storage.

23,187. (Major-General Scott.) The whole basis of the calculation of the storage is the assumption that you are endeavouring to meet the requirements. You have to construct the reservoirs so as to meet the requirements?—That is so.

23,188. Therefore obviously on the diagram it would be shown that they had met it?—They had met it; that is really the object of the diagram.

23,189. (Mr. Mellor.) As I understand you, it so happens that there was available water in the river, but at the time to which you referred the reservoirs were actually empty?—The reservoirs were actually empty at that time. If you take, for instance, the 16th of October you will see that at that time there were 300 million gallons only going down the river. All that 200 million gallons had to go over Teddington weir, so that there was only 100 million gallons available from the river. The rest had to be made up out of storage, and that is what depleted the storage at that particular date. It rose again, of course. On the 20th a small flood came down of 800 millions. That went into store and allowed it to go on. But that amount of storage just satisfied the conditions of the case.

23,190. (Chairman.) Then the inference you want us to draw is that no less storage than that would do?—That is so.

23,191. That is, not less than 28,500 million gallons of net storage?—Not less than 28,500 million gallons net storage would do under the circumstances of last year.

23,192. (Mr. Mellor.) And you do not include, as I understand, any water for the service of the Lea?—Oh, none whatever.

23,193. Just now you said that the condition of the Lea was such that it would be necessary, or might be necessary, to go to the Thames for an additional supply for the East London Water Company. I understood you to say so?—Yes, I said so.

23,194. But in this diagram of yours before us at the present moment you are not taking the Lea into consideration at all, or the East London Company, as I understand?—Not at all. I am assuming that those 300 million gallons are used by the companies for the supply of other parts of London—not of East London.

23,195. Exactly?—In fact, that the East London are not a partner to the Staines Reservoirs Scheme. That is, perhaps, the better way of putting it.

23,196. (Major-General Scott.) If the draught on the Thames were limited to 185½ million gallons, of course if the Lea valley had to be supplied it would mean the exhaustion of the Thames supply would come at an earlier date?—Yes, or it would mean the exhaustion of the amount of storage. I have provided for 185½ millions.

23,197. But I am assuming that a limit was set, that the Thames was not to be drawn upon for more than 185½ million gallons, then if the Lea valley had to be supplied out of that quantity it would mean that the limit of draught upon the Thames would be exhausted at an earlier date?—It would.

23,198. (Mr. Pember.) I may as well ask this at once. Of course the first 185½ contains 10 millions, which the East London Company take for the supply of their district from the Thames?—Yes, of course.

23,199. You said nothing of that. Now, in flood time the East London are unlimited?—Of course, with regard to Mr. Pember's last remark, about there being no limit in flood, East London have no means of taking a larger quantity than about 10-12 million gallons, because their pipe from Hampton to East London will not carry a larger quantity. They could not avail themselves of the flood with their present works.

23,200. (Mr. Pember.) No, the works would have to be altered to take more than 10 millions?—Of course.

(Mr. Pember.) Perhaps by storage and extra pipe too.

23,201. (Chairman.) You say that you estimate to keep things going on the conditions of 1898, a net reservoir capacity of 28,500 million gallons a day is necessary?—Yes.

23,202. Mr. Middleton's estimate was 27,699 million gallons?—I am quite sure your Lordship is right, but I have not got it before me for the moment.

23,203. Look at his Estimate 12, put in at Question 17,726?—Yes, that is right.

23,204. The great difference between you is in the gross storage capacity?—In the gross storage capacity.

23,205. The net storage capacity comes out at no great difference?—That is so.

23,206. Therefore, a net storage capacity, according to you, of 28,500 million gallons, according to Mr. Middleton of 27,699 million gallons, will keep the companies going?—At 300 million gallons a day.

(Mr. Pember.) You said net, do not you mean gross.

(Chairman.) No, I mean net.

(Mr. Balfour Browne.) 28,500 net.

(Chairman.) The great difference is in the gross capacity and not in the net capacity.

23,207. (Mr. Pope.) Sir Alexander does not draw down as low as Mr. Middleton?—No, I provide over and above my net capacity for certain contingencies—one cleaning, and the other bottom impurity and evaporation.

(Mr. Pope.) Quite so, in which Mr. Middleton differs.

(Chairman.) Yes.

23,208. Is there anything else you wish to say upon this diagram F?—I do not think so. It speaks for itself. I have endeavoured to put all the notes upon the face of the diagram.

23,209. Have you got another diagram?—I have got a diagram, G. It is a diagram dealing with the circumstances of 1898, and, assuming that 400 million gallons is taken from the Thames, it shows a net capacity of 46,000 million gallons.

23,210. Net capacity in the reservoirs?—A net capacity in the reservoirs of 46,000 million gallons, and a gross capacity of 55,600 millions.

23,211. There things go all right until the 29th November?—Until the 28th November.

23,212. Then the reservoirs were empty?—They were practically empty then. There is 100 million gallons left in.

23,213. Then there come floods which immediately lift them up again?—Lift them up again.

23,214. You have assumed all through these diagrams that the first 15 days of flood are excluded?—Yes.

23,215. But then, as far as I can make out, these floods of November and December 1898, would have been excluded altogether, because they only last three days and five days respectively?—They are. Your Lordship will notice that they are cross lined in blue as excluded. On that diagram I would like to point out, if your Lordship will look to January of the year 1898 when that flood came down, and which was excluded for the first nine days, assuming it had been taken into the reservoirs, it would have done nothing but fill up that little depression in the storage capacity which occurred about the 10th or 11th of that month; because the reservoirs continued practically full right away into June.

23,216. That is, from January to June, no pumping into reservoirs except slight amounts?—Just slight amounts as the river varied, and the reservoirs being full up to the 9th June.

23,217. I suppose we are to infer from that, however big you make your reservoirs, they remain full during the months when you do not want them and are rapidly depleted in the months when you do?—That is so, my Lord. The difficulty with which we have to deal is not that of the average annual rainfall at all. The difficulty that we have to deal with is the possibility of dry months between May and November. I should remark on that diagram that the river would be reduced to 200 million gallons a day for a period of 206 days.

23,218. That is the fault of Nature?—The fault of Nature certainly. If your Lordship remembers, I put in a table (No. 25) at Question 9228 which showed that the difficulty with which we have to contend is not one necessarily of a very dry year. We have 1885 with 129 days, the average flow of the river being 425·3 million gallons a day; 1887 with 153 days of average flow during that period of 422·9 million gallons; 1893, 188 days with an average flow of 405·2 million gallons a day; 1896, 127 days, with an average flow of 421·9; and 1898, 206 days the average flow of which was only 365·4 million gallons a day. Those are the facts which render it difficult, without very large storage indeed, to work the Thames when we contemplate taking quantities like 300 or 400 million gallons a day. The average rainfall of those years that I have given and some of them above the average, taking them as annual rainfall. The rainfall of the year just past was 22·07 inches, and that compares with the rainfall of 21·32 inches in 1887 and 22·03 inches in 1893. It is the drier months of the year where the difficulty really is, not the average annual rainfall.

23,219. And the difficulty arises from this, that however big your reservoirs, you cannot fill up depletion during the dry months?—No, that is it.

23,220. (Major-General Scott.) Is there not another fact, that as all the water has to be lifted, a considerable proportion of the flood water must always escape?—Always must escape unless you put down inordinately large pumping power to catch these floods during the very limited number of days during which they are passing down.

23,221. They are going down at the rate of perhaps 5,000 million gallons a day, and you can only lift a very small fraction of that amount per day?—Yes, unless you went to enormous expense in putting down engine power which would only be used, perhaps, two or three days in the year.

23,222. (Chairman.) Is there no site on the Thames on which you could construct a reservoir which would take in the water, so that you could draw it by gravitation instead of being obliged to lift it?—I think not, my Lord. At the time of Lord Balfour's Commission, I went very carefully up the whole of the Thames Valley. Reservoirs were at that time proposed in the Upper Thames Valley for storing water in the mode your Lordship suggests, but they were not looked upon favourably by that Commission, and certainly I was of that opinion too, after carefully going into it. It is very difficult in the upper valley of the Thames, where reservoir sites geographically look possible, because you get at once upon the poorest strata of the oolites where it would be difficult to make them watertight.

23,223. Have you examined the site between Abingdon and Didcot?—Oh, yes, I walked over it. It is a flat site, but not one that we could very well embank the Thames right across, and catch the water in flood as we would in an ordinary valley. In connexion with those diagrams that I have placed before you, I have taken out the water area. Of the storage for the 185½ million gallons, the water area, exclusive of the top width of the embankment and the outer slopes, would be 2,207 acres. For the 300 million gallons a day, the area, exclusive of top width of embankment and slopes, would be 4,476 acres, and for the 400 million gallons a day, it would be 6,573 acres. That is water area. Of course it runs over 10 square miles. I took the figures out so as to give some idea of the extent of these reservoirs.

23,224. That is, the reservoirs would be bigger than your Yrfon reservoir?—Yes, they would.

23,225. Which is 3,300 acres, if my memory serves me right?—Yes, about that.

23,226. (Mr. Balfour Browne.) That excludes the embankment, I think?—That excludes the embankments and excludes the top widths and for any land that was required for making the roads to render them accessible.

23,227. (Chairman.) Have you anything more to say about this diagram?—I think, my Lord, if you will allow me, I am, perhaps, in a little better position now, to reply to the questions put to me by Major-General Scott, Nos. 9262 to 9266. It was this: In all my diagrams I have assumed that the reservoirs would be full at the beginning of the year. The gallant General asked me whether that would always be the case. It is pretty evident that all the diagrams I have put before you on the previous occasion show that the reservoirs would not be full at the end of the year, and it is accentuated in all these diagrams I have placed before you to-day, for in the case of the 185½ million gallons on the basis of 1898, the reservoirs would contain only 5,846 million gallons, out of a net storage of 14,000 million gallons. In the case of the 300 million gallons on the basis of 1898, the quantity of water in the reservoirs at the end of the year would only be 4,867 million gallons compared with 28,500 millions, the net storage, and of the 400 million gallons, the total quantity in the reservoir at the end of the year would be 6,742 gallons, as compared with a net storage of 46,000 million gallons.

23,228. Yes. But I suppose you would be able to fill these reservoirs some time between January and May, even with the condition of the river as shown on your diagrams?—Assuming that a similar winter to 1898, were to succeed this diagram you would not get them full.

23,229. (Major-General Scott.) The point I had in view, Sir Alexander Binnie, was two successive years of drought?—Yes. I put it in this way. Assuming the present year had a winter rainfall similar to that of the year just past, 1898, and assuming that you had, not a drought in the summer, but an average flow during the summer, you would not get the reservoirs full in a case like that.

23,230. (Mr. Mellor.) I wanted to ask you this question: On the 31st December, according to your green line, it is obvious the reservoirs were not full?—That is so.

23,231. So that you have not got any diagram, of course, of the year before, because I notice you begin, as you say, with your reservoir full?—Full.

23,232. Is that green line made according to actual quantity?—According to actual quantity.

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23,233. According to the actual quantity in the reservoir?—According to the actual quantity in the reservoir, yes.

23,234. (*Chairman.*) Assuming them full on the 1st January?—Yes.

23,235. Could you not fill them up between January and May when practically you are drawing nothing from your reservoirs?—You would, my lord in the case of an average winter rainfall. But if you had a winter rainfall such as that of the last year followed by a summer of ordinary flow, not a drought but a summer of ordinary flow. I do not think you would, in fact, I know you would not.

23,236. (*Mr. Mellor.*) Then if you do not make the assumption that the reservoir is full at the commencement of the year this green line is not accurate, is not that so? The accuracy of the green line depends upon your assumption that the reservoir was full on the 1st January?—At the beginning of the diagram? Yes.

23,237. What I want to know is if you do not make that assumption, assuming that you take the actual fact, which we do not know, whether it was full or not on the 1st of January; if it was not full on the 1st January your green line would not be accurate?—Certainly not, if it were not full on the 1st January.

23,238. (*Chairman.*) Your green line would go up and down according as you were able to nearly or completely fill your reservoirs between January and May?—Precisely.

23,239. Have you got a diagram showing what would become of your Yrffon reservoirs in years like 1893 and 1898?—I have not a diagram because we did not treat it in that way, but there is not the slightest doubt that the Yrffon reservoir would carry on for three consecutive dry years.

23,240. Have you got at all the flow of the Yrffon during the year 1898?—Not continuously. We do not proceed in these cases in that way. We know what the rainfall is, and we know what is the discharge from the ground.

(*Chairman.*) The rainfall in such a year as 1898 is ludicrously small compared to other years.

23,241. (*Mr. Balfour Browne.*) We know what the three dry years gave?—We know the average rainfall of the three dry years.

23,242. (*Chairman.*) What three?—The three consecutive driest years on record come out at 80 per cent. of the average.

23,243. Which three years?—Any you like to take, my Lord.

23,244. Which have you taken when you give me these figures?—

(*Mr. Pember.*) Suppose there were three 1898's. He has taken two 1898's against us consecutively. Suppose we take three 1898's against you consecutively.

(*Mr. Balfour Browne.*) He has not taken three 1898's against you.

(*Mr. Pember.*) Not on the diagrams, but in answer to the noble Lord's question.

(*Mr. Pope.*) He does not take these three consecutive driest years in this diagram.

(*Chairman.*) You can cross-examine presently, Mr. Pember, upon this.

23,245. (*Chairman to Witness.*) You say on the average of three dry years your reservoir would be full. You must have had some three dry years in your mind when you said that. What three dry years did you take?—Any three dry years. We know as a fact the rainfall. The average rainfall of the three driest consecutive years is just 20 per cent. below the average.

23,246. Which years do you call the three driest consecutive years?—Any you like. You will have to pick them out.

23,247. (*Mr. Balfour Browne.*) His Lordship is asking, in calculating the Welsh Scheme of three years, did you take any particular three years?—No particular three years, because we know, as a matter of perfect certainty, that the average rainfall of the three driest consecutive years is 80 per cent. of the mean.

23,248. (*Chairman.*) When you speak of the average rainfall of the three driest consecutive years, you must have some three years in your mind: what are they?—None whatever, my Lord.

23,249. (*Major-General Scott.*) Is it not the past experience of a number of years?—I may say it is the experience. I do not like to weary your Lordship by repeating it—it is the experience not only of this country, but of all over the world, that the average of the three driest consecutive years that you can pick out of a record are always 20 per cent. less than the average.

23,250. (*Chairman.*) Have you tested that general conclusion by the experience of 1898?—Oh, yes, it is included in that. It would be included as one of the three driest consecutive years.

23,251. (*Mr. Pember.*) How can it be?—We could not do it in Wales this year, for this very good reason, that the rainfall has not been so low as it has been in the more eastern parts of England.

23,252. (*Sir John Dorington.*) What is your rainfall—60 inches?—About 64½ inches.

(*Mr. Balfour Browne.*) It is the ordinary rule in these Schemes that when you get the average—we will say it is 60 inches of rainfall—to find out what you would get in three dry years you take off one-fifth or one-sixth—I do not know which it is—and then you have got what you will collect in three dry years.

(*Major-General Scott.*) That is founded on previous records of rainfall.

(*Mr. Balfour Browne.*) Of course the whole of past experience.

(*Witness.*) Upon the whole of past experience, not only in this country but all over the world.

(*Chairman.*) Those diagrams are testing the Thames storage by the experience of one dry year, 1898?

(*Mr. Balfour Browne.*) Because this is not an impounding scheme at all.

(*Sir George Bruce.*) Indeed it is.

(*Mr. Pember.*) It is.

(*Mr. Balfour Browne.*) It is not impounded by means of dams which catch the floods.

(*Sir George Bruce.*) Yes, it catches the flow—call it flood, or what you like.

(*Mr. Balfour Browne.*) According to Major-General Scott these pumps would not catch the real flood—thousands of gallons will pass by which you could not get into your reservoirs. In the Yrffon case the dam will catch all the big floods.

(*Mr. Pember.*) It is surely an impounding scheme, although it does not, in fact, impound every drop of water which comes down the river. But not the less it is an impounding scheme.

(*Mr. Pope.*) It could be made to impound it all. There is no difficulty in taking the water without any dam at all if you only sink your reservoir deep enough—if you only sink your reservoir deep enough to take the whole flood into the reservoir constructed at Staines.

(*Chairman.*) Yes, but then you double the cost of your reservoir.

(*Mr. Pope.*) That may be.

(*Sir George Bruce.*) You are not testing the Welsh Scheme upon the same basis as you are testing the Thames?

(*Mr. Pope.*) No.

(*Witness.*) Not at all. The two series of calculations are quite distinct and apart.

23,253. (*Sir George Bruce.*) I do not think they are. I think they are practically identical?—I beg your pardon, they are not.

23,254. You are proposing to get water from this Welsh river within your dam—into your reservoir—I will call it what you like, and if you have two or three 1898's of rainfall in Wales, you would, I imagine, be in a very different position from what you would be if you had the ordinary rainfall in Wales?—We know perfectly well what it is. We have got 64½ inches, and take from that one-fifth.

23,255. You know that the Balfour Commission reported upon the other. They took the average rainfall, the lowest rainfall for a great number of years. Then suddenly another year comes, and to a certain extent alters the condition of things, I want to know what you have done, in order to see that that condition of things will not be altered in Wales precisely the

same as with regard to the Thames?—Certainly, and I will try and explain it.

23,256. You have done nothing to explain it. You are simply going on an average of three years. An average of three years was one thing up to 1898; it is another thing after 1898?—It is exactly in the same way, if you will excuse me saying so, that the Royal Commission on which you sat did. They gave the average flow of the Thames as 1,350 million gallons, and they gave the average flow of the Thames based on the three driest consecutive years. That is the same rule that I am adopting. And they gave the driest year.

23,257. Yes, but then a dry year came which is very much drier?—I think when the past year comes to be analysed, we shall not find that it is so very much. Taking the whole year, as I was pointing out to his Lordship, a little while ago, it is only a peculiarity of the three months. Where you are not dealing with the whole flow of the river, you have to deal with your most difficult period, and that is the months from May to November.

23,258. That affects the amount of storage which you require to provide, but it does not affect anything else.

(*Mr. Balfour Browne.*) It is wetter than 1887, according to Sir Alexander Binnie, and practically the same as 1893.

23,259. (*Chairman.*) In 1891, nobody foresaw two such dry years as 1893 and 1898?—Excuse me, my Lord, I did, because I know perfectly well that the driest year on record always falls to about 50 or 60 per cent. of the mean.

(*Mr. Balfour Browne.*) Your Lordship says that in 1891, nobody foresaw so dry a year as 1898. In 1887, they had only 21·32, in this year we have had 22·07.

(*Chairman.*) The Greenwich record is not that.

(*Mr. Pember.*) I am told that you have overstated it. I am told the Greenwich record of rainfall in that part of the world is 18·09 for 1898.

(*Witness.*) I daresay it is. The figures I have quoted this morning are from a series of rain gauges placed all over the Thames valley, which are kept up by the County Council, and Mr. Symons manages them, and I am sure he would be glad to come here and prove 22 inches if you like. That is the average, because it runs up to a long period of years, 28½; Greenwich being 24.

23,260. (*Mr. Pember.*) Do you know what the fall was up to the end of September?—I do not at the moment; I could get it for you if you wished it.

(*Chairman.*) The Greenwich record which was put in at Question 16,797 gives for 1883, I think that was your year Mr. Balfour Browne? 18·75 inches. (*To the witness.*) What is your figure?

(*Mr. Balfour Browne.*) I did not give 1883; I gave 1887, the Jubilee year.

(*Chairman.*) In 1887, the number of inches is 27·56.

(*Mr. Balfour Browne.*) According to Symons's record over the whole of the Thames valley, it was 21·32 in 1887, and the same gauges give in this year 22·07.

(*Mr. Pope.*) Has this been put in? I do not think Mr. Symons's return to the County Council has been put in.

(*Chairman.*) From October 1897 to October 1898, the Greenwich record is 14·75.

(*Witness.*) That is so, the Greenwich average is 24½ inches compared with 28½ inches, the average of the Thames valley above the intakes—the latter is always larger.

(*Mr. Pope.*) Sir Alexander is dealing with a new record which has not been put in, a record based upon gauges furnished by the County Council, and looked after by Professor Symons. We have not had that, and we know nothing about it.

(*Chairman.*) No.

(*Mr. Balfour Browne.*) May I say the Greenwich record cannot bear upon these records? What we are putting in are the records in the Thames valley.

(*Mr. Pope.*) I know your object perfectly, it is perfectly plain.

(*Sir George Bruce.*) The proportions, as at Greenwich, will most likely be the same proportions that you have in the Thames valley.

(*Mr. Pope.*) Although the actual figures may differ.

(*Sir George Bruce.*) Although the actual figures will not be the same the proportion will be the same.

(*Witness.*) May I reply to the learned gentleman's question? He asked me about the total rainfall up to the end of September.

(*Mr. Pember.*) I see it is given here as 14·75.

(*Witness.*) I make it 12·37.

23,261. (*Chairman.*) In what year?—In last year up to the end of September it was 12·37.

23,262. That is from the 1st January 1898 to the end of September 1898?—Yes, up to the 30th September. This was the passage to which I referred in the Report of Lord Balfour's Commission; it is on page 56—the last part of paragraph 133, and is referring to the 1,354 millions: "This, we believe, is a very close approximation to the average daily flow of the Thames down to the waterworks intakes during a long series of years, and we will call it, in round figures, 1,350 million gallons. The average daily discharge of three consecutive dry years we estimate at 1,120 million gallons, and of the driest year at 900 million gallons."

23,263. (*Chairman.*) You say that is taking off what percentage?—That would be arrived at by taking off 20 per cent. in the first instance, and about 40 per cent. in the next.

23,264. I cannot follow that calculation. How many million gallons do you reckon that your Yrfon reservoir will yield altogether?—39,000 millions.

23,265. (*Sir George Bruce.*) Can you draw off 39,000 million gallons from it?—No, I am answering his Lordship's question directly; 39,000 millions, of which 35,700 million gallons would be capable of being drawn off. I should point out that 35,700 million gallons in a district with an average rainfall of 64½ inches is a very different thing from the same storage in a district, the average rainfall of which is only 28 inches.

23,266. (*Chairman.*) Surely you must take into account the difference of the extent of the water shed in the two districts respectively?—Certainly, you have to take that into account, and also the quantity that you will lose by evaporation.

23,267. (*Sir George Bruce.*) We have got, I think, your watershed areas in Wales?—Yes.

23,268. (*Chairman.*) 102,000 acres?—I think so; it is 100 square miles.

(*Chairman.*) The figure I have got in my memory is 102,000 acres.

(*Mr. Pember.*) That is the figure that was given to us; what particular area that applies to, we do not know.

(*Witness.*) I had better put it accurately on the notes if you will allow me. The Yrfon reservoir there drains 64,480 acres.

23,269. (*Chairman.*) 64,480?—Yes, for that particular reservoir.

(*Chairman.*) Where does that figure of 102,000 come in? It was given us that the watershed of that first reservoir was 102,000 acres, and it was assumed that you were going to buy the whole.

(*Mr. Pember.*) That is the Towy and the Upper Wye.

(*Witness.*) If your Lordship will allow me, I will give them all, and then you will see where the 102,000 comes in; Towy 20,160, and the Upper Wye 22,400.

23,270. (*Mr. Pember.*) That makes about 105,000?—About that, I should think.

23,271. (*Mr. Mellor.*) I suppose the flatter the watershed the greater the evaporation, is it not?—That is so.

23,272. (*Sir George Bruce.*) And that is a very small proportion of the Thames watershed?—Very small; of course you have the heavier rainfall on that to make up for it.

(*Sir George Bruce.*) Yes, as far as it goes.

23,273. (*Mr. Pember.*) Perhaps, while Sir Alexander is about it, as he gives us the storage of the Yrfon, would he mind giving us the storage of the other two—the Towy and the other?—There is no storage, as you will recollect, on the Towy, because the Towy drainage is brought by a tunnel into the Yrfon reservoir.

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23,274. You do not make a reservoir?—We do not make a reservoir there, but on the Upper Wye we have a reservoir of 900 acres area and of a capacity of 10,708 million gallons.

23,275. Of course, although you do not store the Towy?—It is stored in the Yrfon reservoir. It passes through a tunnel—that drainage area is brought in by means of a tunnel.

23,276. So you store 49 millions, or thereabouts, in the whole area?—Yes.

23,277. (*Chairman.*) Have you anything more to say about your diagrams; if so, pray say it in your own way?—I do not think so.

23,278. Have you any other diagrams to put in?—I have no more. I have gone through all my diagrams, my Lord.

(*Mr. Pember.*) Your Lordship ought to have a day of thanksgiving for that.

23,279. (*Chairman.*) You say you have nothing more to say about your diagrams?—I think not, unless your Lordship has any more questions to ask.

23,280. No, I am only trying to do justice to your evidence. Now, have you made further estimates on the basis of the conditions of 1898?—I have made estimates for the supply of 185½, 300, and 400 million gallons from the Thames, based on the conditions of 1898.

(*The witness handed in Estimates F, G, and H. See Appendix B, 35.*)

23,281. Estimate F, is for the supply of 185½ million gallons a day and Estimate G for the supply of 300 million gallons a day?—That is so.

23,282. And Estimate H for the supply of 400 million gallons a day?—Yes.

23,283. If you have any observations to make about your estimates, make them in your own way?—They differ from the former estimates in this way, my Lord: If you will turn to F, I will illustrate what I mean at once—it is common to all of them. There is a gross storage of 18,000 million gallons to be provided; from that I deduct, as I did on a previous occasion—we all have done so, I think—866 million gallons, which already exists, and is working. From the remainder I deduct 5,200 million gallons, which has been sanctioned by Parliament, and which, a good deal of it, including the Staines Scheme, is in course of construction. Against the 5,200 million gallons I have placed a sum in each of these three estimates of 2,299,160l., which I arrive at in this way: The Southwark and Vauxhall, Session 1894, have obtained powers—you will see the table at the bottom of my estimate, my Lord—for 365,000l.; then, again, in the Session of 1898 they obtained further powers for 52,000l. The Lambeth, in 1896, had 294 million gallons' storage, for which they obtained 94,080l.—at least, I assume it. There is no allocation clause in the Act, but I have taken it at 320l. per million gallons. The same remark applies to the New River Act of 1897. They have 219 million gallons, which I have taken at 320l. per million gallons, which works out at 70,080l. Then there is the Staines Reservoirs Acts of 1896 and 1898, which I have taken together at 1,250,000l. Those make up the total figures which I then put into the estimate. Then I have left "Storage to be provided in the future," 11,934 million gallons in Estimate F; 30,434 million gallons in Estimate G; and 49,534 million gallons in Estimate H. I have taken those at 320l. I do not want to get into controversy with the learned gentlemen, and I have carefully gone over what I have heard from Mr. Middleton and others, and taking into account the whole of the works necessary, the engine-power, the conduits, the land, and everything, I do not believe those reservoirs could be made for less than 320l. per million gallons. The next item in the estimate is the capitalised cost of annual pumping. If we take Estimate G—which shows it best—I have taken that figure exactly from Messrs. Hunter and Fraser's estimate, which they placed before Lord Balfour's Commission. The same way with the distribution of 170 million gallons; I have taken it exactly from Messrs. Hunter and Fraser's estimate—4,174,800l.—and the capital cost of engines to pump that I have also taken from Messrs. Hunter and Fraser's estimate. Those parts where Messrs. Hunter and Fraser have taken those figures and capitalised at 30 years' purchase, and in the smaller estimate F for 185½ millions and in the larger estimate H for

400 million gallons, I have taken proportions of Messrs. Hunter and Fraser's figures, so I hope to have got rid of what I may call controversial questions in that matter.

23,284. The net result is that you bring out an additional cost of 8,000,000l. odd to bring 185½ million gallons a day into supply?—That is so.

23,285. Of 17,500,000l. to bring 300 million gallons a day into supply, and of 27,000,000l. odd to bring 400 million gallons a day into supply from the Thames?—Yes.

23,286. In each case adding rather more than 2,250,000l. for the authorised works not yet completed and not yet brought into capital account?—A part of it may, but I am not aware of it. I do not know the figures.

23,287. (*Mr. Pope.*) In this case the authorised storage of 2½ millions, to which you add the storage of the Southwark and Vauxhall, two Sessions authorisation, you have given the capacity and cost per one million gallons?—Yes.

23,288. But that is not the storage; half of it is for service reservoirs is it not?—I think not. There was one service reservoir only which I have deducted. The service reservoir I think is near Nunhead.

23,289. Of course it would be more regular when I come to cross-examine you, but Mr. Bestler tells me that in both those figures half of the amount is for service covered reservoirs and not for storage reservoirs at all?—I did not read the evidence when it was given before Parliament in that sense at all.

23,290. You have assumed that it is all devoted to storage reservoirs which may be reasonably compared with such a reservoir as that you are now talking about?—It is governed by section 30 of the Act of that year, section 30 of the Act of 1894, allocates for reservoir purposes 450,000l.

23,291. (*Chairman.*) I suppose, in your view, as in Mr. Middleton's view, the cost of procuring, if I may so call it, a supply of 185½ million gallons a day would be the figure to come off the estimated value of the existing undertakings?—I think so.

23,292. Whereas the larger sums necessary to supply either 300 million gallons, or 400 million gallons would be the cost that a purchaser of the present undertakings would have to incur in the near or proximate future?—If he went on with the Staines Scheme.

(*Mr. Pember.*) Of course he would any way with Estimate F.

(*Chairman.*) Estimate F, is what is necessary to bring up the existing average supply to a proper safe condition.

(*Mr. Pember.*) Yes, he would have to go on with that.

(*Chairman.*) The seller would have to meet the cost of that according to Mr. Middleton's view. According to Mr. Middleton's view, that is a deduction from the value of the existing undertakings.

23,293. (*Sir John Dorington.*) In your estimate of the areas required for these reservoirs, what average depth do you give?—Thirty feet. I took that from the plans and sections of the Staines Schemes, and from what fell from Mr. Hunter. I think he explained that when before Lord Balfour's Commission they proposed at that time to excavate and the water would flow into the excavated part by gravitation, but since then they have abandoned that and found it cheaper to pump the water in and only make such excavation as is necessary to make the banks.

23,294. (*Chairman.*) Have you anything more to say about the estimates?—I think not.

23,295. Just to come back for a moment to your diagrams; the scale on which you show the reservoir contents is a different one from the scale on which you show the contents of the river, is it not?—Yes, but they are both at the side. The darker figures, the full-faced figures in the margin are the flow in million gallons, and then beyond that in the somewhat lighter type is given the reservoir per million gallons.

23,296. It is a different scale?—It is, it is ten times the scale of the other.

23,297. So that every fall in the line showing the amount of water in the reservoirs must be multiplied by ten in order to correspond with the scale in which

the variations of the flow in the river are shown?—That is so. In no other way could we put those very large figures when they run up to 45,000 millions. We could not get it on to the same piece of paper—obviously it would go from here out into the street.

(*Sir John Dorington.*) I think it is quite proper, only it is well to draw attention to it.

(*Chairman.*) I have nothing more to ask you, Sir Alexander; if you have anything to add, pray do.

(*Mr. Balfour Browne.*) Sir Alexander wanted to say something, I think, about the effect of diminishing the water at the limit of the tidal influence which was spoken to by Mr. Eaton.

23,298. (*Chairman.*) Pray say what you have to say about that?—I think some little misapprehension occurred first in this respect, that under the conditions of the Richmond Weir the water which is impounded by the weir at half-tide level is really 5·50 feet below datum. That water so impounded is not let off in flush to flush the river. It is kept there, and that is what the weir was built for, to hold up that amount of half-tide water. By that amount which is held up already, the tidal capacity of the upper river is reduced. Had that weir not been there all the quantity of water that is now every tide impounded would have flowed down the river and increased the tidal flow.

23,299. Yes, that is obvious?—The effect of taking the whole available flow of the Thames is really a thing which I, myself, with all respect, cannot contemplate. We are, on the one hand, to have the Thames reduced to 3½ million gallons a day for lockage, and on the other, all the floods are to be taken. The effect would be disastrous on the Thames if that, or anything approaching such a state of things, were permitted.

(*Mr. Pope.*) Nobody suggested taking all the floods.

(*Chairman.*) Nobody has done so.

(*Mr. Pope.*) It has no bearings upon the floods. It is a question of minimum flow.

23,300. (*Chairman.*) I do not recollect anybody suggesting taking all the floods?—The words that Sir Frederick Bramwell used were—the whole available flow of the river.

23,301. (*Mr. Mellor.*) Yes, I understood him to say so, certainly?—The whole available flow of the river must include floods; in fact, I have heard evidence here that floods were to be taken.

(*Chairman.*) Yes, you might begin when you liked with flood water, but it certainly was not conveyed to my mind that anybody suggested you should take the whole of the 1,400 million gallons.

(*Sir George Bruce.*) Nobody ever suggested that.

(*Mr. Lewis.*) It could not be done.

(*Chairman.*) In the first place, you could not lift it.

(*Mr. Pope.*) Surely the whole question is—what is the difference between 100 million gallons and 200 million gallons as the minimum over Teddington Weir.

(*Witness.*) Yes.

(*Mr. Pope.*) That is to say, at low water you might reduce the fresh water passing down the river to a mere dribble in the channel. That is the whole matter, it has nothing on earth to do with taking water in a flood.

23,302. (*Sir John Dorington.*) Surely, as compared with the quantity of water in the river at every tide, the 200 millions that can run is a mere dribble, as shown by that diagram?—Undoubtedly; but, as I have said before, you are in that position that every dribble is absolutely necessary. The water that flows up the river brings with it a large quantity of silt; at high water the velocity is checked, and that silt is deposited, but the down-flowing tide, unaided by the upland water, does not remove that silt—it leaves it there. If you deplete the river down to these small quantities, that will gradually decrease, year by year, the tidal capacity of the river.

23,303. (*Mr. Mellor.*) That is to say, the scour would be affected by it?—The way in which a tidal river alone can be kept open is not by the reflux up and down of the tide, but it is by the continued downward pressure of the upland water as well, and when you have reduced the river, as the Thames is threatened to be reduced, every drop is of the utmost importance.

23,304. (*Chairman.*) It is only a question between 200 million gallons and 100 million gallons—that is the

only question that has been raised before us, therefore, the only loss would be the loss of such scour as is due to 100 million gallons?—I have hardly taken it so.

23,305. (*Sir John Dorington.*) Have you any idea what would be the quantity of water passing down in any one tide—take the first mile?—A very large quantity indeed.

23,306. One hundred million gallons, I daresay, in the tide?—Many hundred million gallons—a thousand million gallons. But that is not the question. The question is not what it passes down, but how far does it come back again. If unaided by upland water it must simply oscillate backwards and forwards, every time it comes up depositing its silt, then drawing off gently, and not taking that silt back again. Take, for instance, the depletion that has already gone on in the river. We know that at the beginning of this century people drew their drinking water from London Bridge and from Hungerford, quite apart from any pollution in the river. It would be impossible for them to do it now, because of the brackishness of the river; the sea water comes up much higher now than it ever did at the beginning of the century.

23,307. Was that not mainly due to London Bridge forming a weir?—I do not think so.

23,308. I should have thought this 200 million gallons was more important between Teddington and Richmond, in order to maintain a reasonable flow there?—Of course, it is in that way important, but it is infinitely more important to the river as preventing the silting up of those parts.

23,309. You say the great importance really is below the Richmond Weir?—Yes.

23,310. (*Chairman.*) I understand you to say that a hundred millions over Teddington Weir is quite an insufficient quantity of upland water to scour the river?—Certainly.

23,311. On the other hand, you, yourself, are content with 200 million gallons?—I am compelled to be so. You will hear what the Thames Conservancy are going to say on the subject.

23,312. You reluctantly consent?—I reluctantly bow to them.

23,313. That extra 100 million gallons makes all the difference in your judgment?—It makes a great deal of difference when you have reduced the river to that state, and contemplate running it on that for 200 days out of the year.

23,314. The first 100 million gallons is powerless; add another 100 million gallons and it becomes effective?—It does. When you have got a river into that critical condition, every drop of water is important. It is the only thing to press the tide down.

23,315. I should have thought that was very like Mrs. Partington's mop. If the tide is thousands of million gallons coming up, what effect can this extra 100 million gallons have upon it?—When we contemplate a river of 1,350 million gallons average discharge, and we are sitting here and remembering that the river feeds and keeps up the great port of London—when we sit here calmly, and talk of reducing that river to 200 million gallons, for a period of 200 days, it is a matter of the very gravest concern indeed. I am reluctantly compelled to bow to the 200 millions.

23,316. The utmost flight of your fancy was 250 million gallons?—Because, I could not see my way to getting any more. Your Lordship will quite understand what I mean. It becomes so exceedingly expensive in those reservoirs, the storage runs up to such enormous volumes.

23,317. (*Major-General Scott.*) Assuming that, under the conditions that only 200 million gallons a day flowed down, there was some silting in the river, would not a season like we have just gone through—say the month of January, when there was an immense quantity coming down in floods—obliterate and carry away all injury that had been done by that particular flow—would not the result after all this flood had gone down the river be simply to restore things to what they were before?—I do not think so. From what I hear from people, as low down the river as Chiswick, in later years, without going to the extreme of this year, there is a tendency to more accumulation of mud, notwithstanding the down-flow of the floods in every year of the last few years.

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23,318. These floods that have come down lately are altogether enormous compared with such a quantity as 200 million gallons?—I quite acknowledge that.

23,319. (*Chairman.*) Do you mean to say that you wish us to conclude that the Thames is gradually silting up?—I am afraid that is the inevitable result at which we have to arrive, by gradually absorbing half the flow of the Thames for many months at a time.

23,320. (*Sir John Dorington.*) Have we any evidence that that is going on?—We have no evidence of it at present, but it is one of those gradual growings up of a state of things which will put an end to the river altogether.

23,321. Surely, if this was going to happen, we should have some evidence that it was beginning already?—I think that you will hear some evidence. I do not want to talk for the Thames Conservators, but I think you will hear evidence of what is taking place now—certainly of what took place this year.

(*Mr. Balfour Browne.*) We are quite prepared, if your Lordship wants us to go into this matter, to call further evidence upon it.

(*Chairman.*) It is Sir Alexander Binnie who has raised this matter.

(*Mr. Balfour Browne.*) It was raised by Mr. Eaton and Mr. Hawksley, if you will remember, to some extent, and it is since that, that Sir Alexander wants to explain his views.

23,322. (*Chairman to witness.*) Have you anything further to explain?—I have not.

Cross-examined by Mr. PEMBER.

9321. 23,323. Just let me understand the position with regard to these three estimates which you put in. Of course, as we know, your original estimates as to the amount of storage required for the 185½ million gallons, and the 300 million gallons, and the 400 million gallons—if indeed you went so far as to deal with the 400 million gallons at all—was given at a time when we had not got the experience of 1898 before us?—That was so.

23,324. And, therefore, you could not do what Mr. Middleton did for us—deal, at all events in a very great degree, with the year 1898?—In his first evidence, which he gave in July, his evidence was parallel with mine, but, at a later period, he came forward and gave the result of 1898.

23,325. Therefore, it seems a perfectly natural and proper thing for you to wish to do—you have desired by these diagrams, and by these estimates, to bring your evidence up to Mr. Middleton's later point?—That is so. I did it at the request of the Royal Commission.

(*Chairman.*) No; not at our request.

(*Witness.*) I was asked if I wished to do it.

(*Chairman.*) Yes, you were asked if you wished to do it; it was only fair to allow you.

23,326. (*Mr. Pember.*) I was only wishing to see how far I should cross-examine Sir Alexander; that is really the point. (*To the witness.*) We may say, may we not, that, on principle, these three estimates of yours, F, G, and H, made applicable to 1898, are drawn exactly like your B and D of 12 months ago?—Exactly so.

23,327. With the exception—?—With the exception of interpolating that 5,200l., and giving the capitalised amount 2,299,160l. There were a great many questions being asked of many of us who have been before the Commission about that, so I put it in that way.

23,328. With that exception, any criticism that we might have to make with regard to the cost of reservoirs, with regard to the items for pumping for supply, and the items for pumping for distribution, and so on, all that we made with regard to your former evidence we should have to make now?—Yes, you would really be repeating your cross-examination.

23,329. (*Mr. Balfour Browne.*) The cost of the reservoirs is altered?—That is so.

23,330. (*Mr. Pember.*) My learned friend is quite right, with the exception that you have reduced the 380l. to 320l.?—Yes.

23,331. Then I do not think I should lose myself in a little sea of details with Sir Alexander to-day?—If

you will recollect, Mr. Pember, we went over the whole of it before the recess in July last.

23,332. And Heaven protect us from having to do it again! You rely on the estimates that Messrs. Hunter and Fraser made some years ago?—I take the figures of Messrs. Hunter and Fraser before the Royal Commission—

23,333. Although you have heard all that Mr. Middleton and others, including Mr. Hunter, had to say upon the fact that their present estimates are based on the actual contracts which they have got for the Staines reservoirs?—Their present estimates on the cost per million gallons I heard, and I have come to the conclusion that 320l., which is one of their own figures—

23,334. One under certain circumstances?—Yes. The capitalised cost of pumping—taking Estimate G, 136,440l., distribution 4,174,800l., and capitalised cost of engines 1,212,300l.—all those figures are copied exactly from Messrs. Hunter and Fraser's estimates.

23,335. I daresay, but not from ours?—Not from yours.

23,336. You mean the estimates put before Lord Balfour's Commission?—Yes. The great difference between my figures in July last and Messrs. Hunter and Fraser's figures is this—it is that difference about which we had a good deal of talk—whether 30 years' purchase should be allowed on the capitalised sum.

23,337. What I wanted rather to accentuate is that I do not care very much about Messrs. Hunter and Fraser—?—Possibly you do not.

23,338. And that I prefer to rely on two gentlemen like Mr. Middleton and Mr. Hunter—Mr. Hunter, of course, is one of the two named, but I prefer Mr. Hunter in 1898, who has got his contracts for the Staines reservoirs, to Mr. Hunter of 1891, who had not—

(*Mr. Balfour Browne.*) That is the 320l. Sir Alexander has taken.

(*Mr. Pember.*) I know.

(*Witness.*) That will not help you out of the 30 years' purchase.

23,339. (*Mr. Pember.*) Now, I think I will pass from the estimates—because I have my own view about that, and I see exactly what you mean—to the diagrams. There is one thing that I do not quite understand. Take the last one—G. Why is it that the reservoirs, which were full on the 1st of January, drop down to the 8th very sharply—it is a mere detail, but they do drop?—Because I do not include the flood which was flowing down from the 1st to the 9th.

23,340. But we should not be taking anything out of the reservoir—

(*Chairman.*) Because you would not be able to pump.

(*Witness.*) If you do not take the water out of the river—if you do not take the flood—you must draw on your capacity, you see.

(*Mr. Pember.*) I see now.

(*Witness.*) What I remarked to the noble Chairman was this: That whether you took that flood or did not take that flood, the only difference on the diagram would be that you would get rid of this little triangular depression.

23,341. (*Chairman.*) Only if that was on the same scale it would be an enormous triangular depression?—Of course it would.

23,342. (*Mr. Pember.*) What do we do now under similar circumstances?—During a flood?

23,343. Yes; what do we do now?—I really do not know. The Chelsea Company, when they have the water, give a return to the Local Government Board and turn it out.

23,344. We know about the particular Act of the Chelsea Company, but what do the other companies do at the present moment?—They have got a certain amount of storage to begin with, and others have got an amount of pumping through gravel beds—I think it is the Southwark and Vauxhall.

23,345. That only relates to one, I think—what do the others do?—They take a certain amount of storage for settlement.

23,346. That certain amount of storage, you know perfectly well, is something very small?—It is very small.

23,347. They must take it from the river, must they not?—They take it through their storage reservoirs from the river.

23,348. They must take it every 24 hours. Then with regard to the storage, of course, I assume that the same idea runs through all—you take off a much larger amount for evaporation and for bottom water than we do?—Yes, that is the fact.

23,349. How much do you take off your 45,000 millions—the G. one?—4,000 millions for cleansing, and for bottom evaporation 5,600, that makes 9,600.

(Mr. Pember.) I was going to say that I may put it down as very nearly 10,000 million gallons.

(Mr. Balfour Browne.) That is off net, but it is off the 55,600, which brings out the net 46,000 million gallons.

(Mr. Pope.) We do not differ so much as regards gross, as we do as regards net—that is the outcome of the whole.

(Witness.) I put it the other way; we agree pretty nearly about the net; we do not agree about the gross.

(Mr. Pope.) The gross being the amount necessary to secure that net.

23,350. (Mr. Pember.) I see that on your estimate you give me the figures that I was asking you for?—I do.

23,351. So I will not trouble you for them. There is just one thing I want to make my own mind clear about if you do not mind telling me. Supposing we agree, taking it as a hypothesis that 400 million gallons is to be taken from the Thames, if you put the 55,000 millions with the deduction down to 45,000 millions, do you say that is sufficient, or not, for the purpose in the way of storage?—That is so. That is what I explained to his Lordship.

23,352. That would be sufficient?—That would be sufficient storage.

23,353. That is quite enough; and the same answer applies to the two other diagrams?—Yes, there is no doubt about that.

23,354. (Mr. Pope.) The fact is, that at the end of the year, the reservoir was not full?—It was not.

(Mr. Pope.) Unless there is something to fill it at the beginning, the whole calculation is disturbed.

23,355. (Mr. Pember.) If we had two dry years like 1898, one after the other, this calculation would be disturbed?—Yes, it would be.

23,356. But you must place two dry years like 1898, coming consecutively, you see?—We can hardly conceive it.

23,357. Exactly, we can hardly conceive that. That is all I want to say about the Thames. Now, with regard to the Lea, the first thing that I am asked to ask you about that, is by Mr. Francis; you have got the daily natural flow of the Lea?—I have at Feilde's Weir.

23,358. That natural flow of the River Lea would mean (if you followed the analogy of what you have done on the Thames) if there were no water companies in existence taking any water at all?—No. It is the actual flow of the Lea at Feilde's Weir, after the New River Company have deducted their quantity.

23,359. Excuse me for saying that is not the natural flow; it is the actual flow?—Yes, it is.

23,360. That is not what you have done for the Thames—

(Chairman.) It is not quite actual flow, because the East London Company is taking something else. He only deducts what the New River Company take.

(Mr. Pember.) I cannot say that, my Lord.

(Chairman.) Yes, it is so.

23,361. (Mr. Pember to witness.) What did you mean by natural flow; just tell us?—I meant the flow of the Lea at Feilde's Weir, after the New River Company have deducted whatever the quantity was.

23,362. You may take it to be 22½ millions—

(Mr. Pope.) Or whatever it is.

23,363. (Mr. Pember.) It is 22½. Then, with regard to the noble Lord's question; the actual flow does not

take into account anything taken out by the East London?—No.

(Mr. Pember.) I thought it did not. By actual flow, he means the flow before the East London have touched the river.

(Chairman.) Yes, before the East London had touched it; but, after the New River Company had taken their first 22½ which they are entitled to in any event, even if that was the whole of the Lea.

(Mr. Pember.) Why Mr. Francis asked me to get that from him was that the natural flow means quite a different thing in his diagrams on the Thames, and we could not quite make that out.

(Witness.) There we are quite correct.

(Chairman.) As I understand the Acts of Parliament, the New River Company may take 22½ million gallons, if there was only that quantity in the Lea.

(Mr. Pember.) Subject to the clause about the navigation.

(Chairman.) Yes.

(Mr. Balfour Browne.) The 5½ millions is the first pull.

(Chairman.) 5½ millions is the first pull, and then come the 22½.

(Mr. Balfour Browne.) Yes.

23,364. (Chairman.) If these exhaust the Lea, then, so much the worse for—?—The East London.

(Chairman.) For the East London, and those who live on the Lea.

23,365. (Mr. Pember.) Let us understand a little what your evidence of to-day is. You say that the East London have constructed and are working 1,200 million gallons of storage?—Yes.

23,366. And that they have 1,015 authorised?—Yes.

23,367. And that their take up to this time has been 32½ millions?—Yes, on the average of the 6 years that I gave you.

23,368. Do you say that that storage is enough or not; is that sufficient or not to enable them to go on?—It is not sufficient in another year, or rather another 17 months like the last up to the end of the year.

(Major-General Scott.) Which storage are you referring to.

(Mr. Pember.) The storage of 1,200 which they have got now, and the storage of 1,015 which they have got authorised making in all according to him 2,215. I rather think it is 10 millions out.

(Witness.) It is 2,225.

23,369. Yes, that is the real truth, but you gave 1,200, and then 1,220.

(Mr. Balfour Browne.) 1,210 is the exact figure.

23,370. (Mr. Pember.) I asked that, because I see that at Questions 9421 to 9424, you said their storage was sufficient. The Chairman asked you this question: "But will not the Lea Valley supply require just the same additional reservoir space that the Thames requires. I mean, Lord Balfour's Commission regarded reservoirs as necessary for the Lea supply as well as for the Thames supply?—(A.) They did. (The Chairman.) Therefore, that would be another item of expenditure. (Major-General Scott.) They look upon the Lea as exhausted?—(A.) I almost look upon the Lea as exhausted, but the East London Company, since the report of Lord Balfour's Commission, have added the reservoirs. (The Chairman.) But have they added sufficient?—(A.) I think so. (Q.) Have they added up to the standard?—(A.) I think so. They do not claim to get more than 30,000,000 gallons a day, if you recollect. They are drawing a little more than that, but, I think, with the reservoirs they have now got, they can supply that amount?—Yes.

23,371. Is that true?—That was true when you refer to the 16th of May last, but I am here to-day to show how my ideas of the 16th of May last are altered by the circumstances of the past year.

23,372. But you do not mean to say that the circumstances of the past year are such as to make that 2,215 storage deficient by the amount of 5,000 a day?—I do.

23,373. That is to say, that the storage which was 2,200 for 1893 should be 7,200 odd for 1898—because

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that is what you said?—I believed that that storage was sufficient till we saw—

23,374. That is not the question; you said the deficiency, at least I took a note—?—The deficiency is 5,200 million.

23,375. Very good; then, I say, are we to understand that in your opinion the difference between 1893 and 1898 is such that the storage for 1893, which was good enough at 2,200, must be to make it good enough for 1898 no less than 7,200?—That is about it.

23,376. Now Mr. Bryan can deal with it?—May I make a remark.

23,377. Certainly?—I do not think there is any dispute between Mr. Bryan and myself. Mr. Bryan has got a Bill before Parliament now in which he is proposing to make an additional 5,000 million gallons storage.

(Mr. Pember.) We know, and we shall hear how much he hopes to get for that.

(Chairman.) I do not think we have had any figures from the companies as yet as to the difference in the storage requisites of the Lea under the conditions of 1898.

(Mr. Pember.) No.

The witness withdrew.

After a short adjournment.

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Mr. CHARLES JAMES MORE called and examined.

23,378. (Chairman.) You are a member of the Institution of Civil Engineers?—I am.

23,379. And for the last 18 years you have been engineer to the Thames Conservancy?—I have.

23,380. We know that the Conservators in 1892, when Lord Balfour's Commission was sitting considered what would be the safe minimum flow of the Thames?—They did.

23,381. Perhaps you had better put in the resolution to which they arrived on the 5th December 1892?—On the 5th December, 1892, after very careful consideration of the whole question, the Board came to this resolution: "That the Engineer be authorised to state, in evidence before the Royal Commission on the Water Supply of the Metropolis, that it is the opinion of this Board that when, after the abstraction of the quantity of 130 million gallons a day now allowed to be taken for the supply of the Metropolis, the day's discharge at Teddington Weir exceeds 200 millions of gallons there may be further taken such part of the excess as may be required for immediate consumption or for storage, but that in no case should the discharge over the weir be allowed to fall below 200 million gallons unless compensation is made by a tidal reservoir, or otherwise, to prevent injury to the river below the site of the new lock and weir at Richmond."

23,382. (Mr. Pope.) That was before the construction of the Richmond weir?—Yes, it was.

23,383. (Chairman.) That is to say, the Conservancy were then of opinion that anything over 200 million gallons over Teddington Weir might be taken?—That is so.

23,384. That is that 200 million gallons over Teddington Weir was sufficient?—The Conservators were of opinion that if 200 millions were left to flow down over Teddington Weir the Companies might take the excess at any time.

23,385. (Mr. Mellor.) That means every day, I suppose?—Every day.

23,386. (Major-General Scott.) Do you attach no difficulty to the take from the river being to such an extent that the 200 million gallons a day would be extended over very long periods such as 200 days?—Yes, it was considered, of course, that the 200 million gallons a day might be extended over a considerable period.

23,387. And you think that the river being reduced to 200 millions a day for 200 days would not have any injurious effect?—That was the opinion that the Conservators came to—that they might allow it to go down as an absolute minimum—a minimum, that is to say, of 200 million gallons.

(Chairman.) We have had it for the Thames, but we have not had it for the Lea.

(Mr. Pember.) No, I think the reason being—I think it was Sir Alexander Binnie—I cannot find the exact question at the moment, but I think that there was a distinct declaration made by witnesses on the other side that we need not take the Lea into consideration in that matter, because the storage that was authorised and made was enough for the purposes of the Lea.

(Chairman.) Yes, but of course, we know from your own evidence that the conditions of 1898 alter the requirements for storage enormously as compared with 1893.

(Mr. Pember.) Yes, but of course Mr. Bryan has not yet been in the box for the purpose of telling you that.

(Chairman.) I am not in the least finding fault, but we have had as to the Thames a startling difference in the amount of storage that you yourselves admit would be requisite if the conditions of 1898 are to be repeated.

(Mr. Pember.) Certainly, it is quite true.

(Chairman.) And that would apply in the same way to the Lea.

(Mr. Pember.) Yes.

23,388. (Mr. Mellor.) As I understand, that 200 millions was to be the minimum?—Yes, the minimum.

23,389. Not as a regular practise, but as a minimum?—A minimum, that is to say, if the companies required it they might draw the river down to that point, but not lower than that point. Of course, when there was a natural flow exceeding the 200 million gallons, and whatever the companies required, the surplus would go down the river as usual.

23,390. (Major-General Scott.) We have had it in evidence that taking, for instance, a draught 300 million gallons for supply, 200 million gallons over Teddington Weir would be the maximum for very considerable periods of time?—That is so.

23,391. Many days?—For a considerable period.

23,392. That you contemplated, and you think no harm would result?—No, we are prepared to face that.

23,393. (Sir John Dorington.) Of course, that resolution was passed upon your advice as the engineer?—Partly, of course, it was.

23,394. (Chairman.) You gave evidence before Lord Balfour's Commission, as we know?—I did.

23,395. Did the Conservators consider the question again when this Commission was appointed?—When this Commission was appointed, they did consider it again, and when this Commission asked me to come here and state their views, they considered the matter on the 23rd of January.

23,396. Of this year?—Of this year, and they passed this resolution: "That the engineer, and the secretary, if necessary, be authorised to state in evidence before the Royal Commission on water supply within the limits of the Metropolitan Water Companies, that the Conservators see no reason to depart from the opinion expressed in their Resolution of the 5th December 1892, and that they adhere thereto."

23,397. The Conservators, I believe, appeared when the Staines Reservoirs Bill, and the Southwark and Vauxhall Water Bill were before Parliament?—They did.

23,398. Did they assent to the limits fixed in those Bills as to the amount which should pass down the river?—Practically they did; they asked for a little more, but the Committee did not give them quite what they asked for. The end of it was that the limit was fixed in the case of the Staines Reservoirs at 230 million gallons and in the case of the Southwark and Vauxhall Water Company at 212 million gallons.

23,399. (Mr. Pope.) At Bell Weir?—The amounts were fixed at Bell Weir; that was to be the point of

measurement, but the equivalent quantity at Teddington was what I have given you.

23,400. (*Chairman.*) Have the Conservators any official gauge at Teddington Weir by which they can ascertain accurately the amount passing over Teddington Weir?—The amount passing over Teddington Weir is gauged every day; I may say that Teddington Weir is not very well adapted for very accurate measurement, it is a weir which was constructed at different times and with different sorts of tackle, but as nearly as we can get it there is a very careful record kept there, and it has to be calculated out every day, and the results are published.

23,401. (*Mr. Mellor.*) By the Conservators?—Yes.

23,402. (*Chairman.*) You say the weir is not very well adapted to make these calculations accurate?—It is not very well adapted in this way: that the calculations have to be very complex. It is not what you may call a gauge weir in the proper sense of the term, as you cannot tell at any moment what is passing over it.

23,403. (*Sir John Dorington.*) Is it subject to a great deal of correction?—Not so much, that. We know what to correct it by, but it contains a large number of gates, and each gate has to be calculated separately. It is rather the trouble of calculating it, but you do not get inaccurate results from it, the results are accurate enough but very troublesome to get.

23,404. (*Major-General Scott.*) Is it leaky?—Slightly, but we allow for that.

23,405. (*Chairman.*) I suppose the Conservators would desire that Teddington Weir should be made a gauge weir?—It would certainly be better.

23,406. Have you not funds to do that yourself?—I do not think the Conservators have any funds to spend on a weir which is efficient for other purposes.

23,407. You might put that on the backs of the companies, perhaps?—We have the whole of the calculations made out for every year, and I will put in the last year's calculations.

(*Chairman.*) That will be very interesting.

23,408. (*Sir John Dorington.*) Is there any gauge at Richmond Weir?—At Richmond Weir there is no gauge.

23,409. (*Chairman.*) I suppose I am hardly entitled to ask you your view. You, of course, come here as the mouthpiece of the Conservators?—I think not only that, but I am quite prepared to adopt the views of the Conservators as the consulting engineer of the Conservators.

23,410. I mean do you attach any vital importance to this amount of 200 million gallons a day?—I attach importance to it certainly. The chief evil that would happen if you reduced the 200 million to 100 million would be at Richmond, and probably Putney, or somewhere thereabouts, being worst at Richmond, and gradually decreasing as you went down the river. There is a certain amount of navigation which ought to be carried on, pleasure navigation during the whole day in boats and steamers; a considerable number of steamers go up there, and if you reduced this amount to 100 million gallons you would probably almost stop this altogether.

23,411. What difference in the depth of the river would there be between 100 million gallons a day coming over Teddington weir and 200 million gallons a day?—That would vary; I think about Richmond it would be about—

23,412. Do not say "about Richmond"—do you mean above Richmond weir or below?—Down to Richmond weir there would be no difference, whatever you bring down it would merely affect the velocity of the current, and nothing more. Below Richmond the difference between 200 million gallons and 100 million gallons would be about 7 inches in the absolute level of low water. When you get down to Kew it is about 4½ inches; from there it diminishes gradually, till you get down of course to where it dries out.

23,413. (*Sir John Dorington.*) Is that over a very narrow channel in the middle of the river?—That is over a very narrow channel. Of course the depth at present in some parts of the river there does not much exceed 2 feet 6 inches, so that if you bring it down another seven inches, you practically stop any possibility of navigation at all.

23,414. Is that at dead low water?—Yes.

23,415. Two feet six inches?—Something like that.

23,416. (*Chairman.*) And that only in the middle of the river?—That is in the deepest part. Of course, up at that part of the river you must remember that low water is not simply a momentary thing, but that the period of low water lasts from something like three to four hours below Richmond Lock.

23,417. (*Major-General Scott.*) Without perceptible change in fact?—With very little change indeed.

23,418. (*Chairman.*) What is the draught of the steamers?—They draw about 2 feet or 2 feet 3 inches.

23,419. So a difference of 7 inches off 2 feet 6 inches would just about stop the steamers?—Yes.

23,420. Would it not stop the wherries or the steam launches or the pleasure traffic?—It would stop the steam launches altogether because they draw more water.

23,421. Would it?—These steamers I am talking of are pleasure steamers which are specially built to draw a very light draught, but some launches would draw 5 feet to 7 feet.

23,422. (*Sir John Dorington.*) What would the channel be—300 feet wide?—No, 50 or 60 feet up there; it may be 100 in some places.

23,423. (*Sir George Bruce.*) What will be the difference in width as between 200 million gallons and 100 million gallons?—That depends on the shore, whether it was a very flat shore or not.

23,424. Ordinarily speaking?—You may say, I think, that at the flattest place it would be about 35 feet I imagine, and that would come down to about 8 or 10.

23,425. (*Chairman.*) About what?—There would be about 35 feet of difference in absolute foreshore exposed, down to about 8 or 10 feet.

23,426. (*Mr. Mellor.*) The exposure of the foreshore would cause a greater extent of mud?—Of mud perceptible at low water.

23,427. (*Sir George Bruce.*) Seventeen feet on each side?—Something like that. It would depend entirely on the slope whether it was on one side or the other, but on an average it might be that.

23,428. (*Chairman.*) Of that 17 feet, if the 200 million gallons were coming over, no navigation could avail itself?—No, not at that point; there the navigation would not be affected in any way. It would be merely the appearance of the shore.

23,429. In that part of the river, in the centre, where navigation can take place, do I understand you that the steamers would be stopped if the 200 million gallons were cut down to 100 million gallons?—I think they would; some that can go up there now could not go any longer. I may just point out that up there you are dependent entirely on the land water during the last two or three hours of the ebb tide. The tide drains right away. This 100 million gallons is not then a proportion of the tidal water, but it is a proportion of the land water.

23,430. I understand you to say that if you had only 100 million gallons instead of 200 million gallons, there would be 17 feet odd on each side, which would be left bare?—More than there would be with the 200 million gallons.

23,431. Yes; but on the other hand in the middle of the channel, would you keep water enough for the ordinary navigation, even if only 100 million gallons came over?—I do not think you would.

23,432. Is it in the middle channel that you say a difference of 7 inches of depth would take place?—It would be there that it would be felt of course. It would be right over the whole surface of the water, but it is in the middle channel where the navigation goes that the effect would be felt of course.

23,433. And you say that in the middle channel the maximum depth, even with 200 million gallons, is only 2 feet 6 inches?—In some places it is not more than 2 feet 6 inches now between Kew and Richmond.

23,434. (*Mr. Pember.*) Above Kew the difference would only be 4½ inches I understand?—That would be at Kew Bridge, but as you go up it varies from 4½ inches to 7 inches.

23,435. (*Chairman.*) What is the depth immediately below Richmond Weir?—The depth immediately below the weir where the water comes in is pretty deep about 7 or 8 feet, I should think 8 feet.

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23,436. That diminishes to 2 feet 6 inches down at Kew?—That gradually goes on till you have a lot of shallow places where there is not more than 2 feet 6 inches, where these light draught steamers actually do go aground during the summer time now and did during the last season.

23,437. How far below Richmond Weir does that depth of 6 or 7 feet extend?—Not very far; perhaps 300 or 400 feet.

23,438. That is only the wash of the weir?—Only where the weir is.

23,439. (*Major-General Scott.*) What is the character of the stream below Richmond weir when these large floods are passing, which we have had in the present January; what is the character of the stream below the weir then, at low water?—You have plenty of water.

23,440. Is it from bank to bank?—Yes.

23,441. Full to the bank?—Yes.

23,442. Quite full?—In flood time there is ample water everywhere.

23,443. And a considerable current going down?—A considerable current.

23,444. Sufficient to carry the silt away from the banks?—Quite so.

23,445. To clean the river in fact?—I suppose it is these floods that do clean the river really.

23,446. (*Sir George Bruce.*) And only the floods that clean the river?—I suppose practically in the upper part of the reaches we depend on the floods for cleaning the river out.

23,447. (*Major-General Scott.*) Assuming that there had been a deposit of silt with a resulting flow of only 200 million gallons for a considerable time, and then such floods come down as have come down recently, do you think that all that would be swept away and the river restored to a normal condition?—I think a great deal of it would go, probably not all but the greater part of it would certainly go.

23,448. Do you think there would be gradual accumulation?—It would depend on the position. I think in some places favourable to the deposit of the material the floods might not succeed in clearing the whole of it away.

23,449. What would be the ultimate result in the course of a series of years?—Those particular parts would get silted up, but the main channel, I may say, I do not think would.

23,450. (*Chairman.*) Can you point to any part of the Thames that is being silted up?—No, I cannot.

23,451. You seem to say that there are some parts where this accumulation of silt would not be carried away by flood?

(*Mr. Pember.*) He was halfway through an answer about the main channel, my lord.

(*Witness.*) The main channel I do not think would be affected by the floods. We do not think that there is any accumulation there, but in some of the backwaters and such places there is a certain amount of accumulation.

23,452. Have you any observations which can show us that?—Yes. Even last summer I found at Richmond Lock and Weir there was a very considerable deposit of mud in the lock itself. We have had twice to clear it out.

23,453. Above the lock?—Actually in the lock and just above it. That probably was caused by the very slight current there was there during the summer months.

23,454. (*Mr. Mellor.*) I suppose you do your best to keep the channel clear?—Yes, we have to dredge it out.

23,455. (*Major-General Scott.*) But it is a very important thing to know what is the ultimate tendency of the state of things which would be produced by taking, say, 300 million gallons from the river and leaving only 200 million gallons to go down over long periods of time. What would be the tendency really of that state of things; would there be a gradual silting up of the bed of the river, and the formation of dry land in certain parts of the river below the weir?—No, I do not think it would go to that extent.

23,456. (*Chairman.*) As I understand, you think 200 million gallons over Teddington Weir is sufficient to

keep the river in good condition?—I do think if we can guarantee to have that at all times we may safely allow it.

23,457. (*Mr. Mellor.*) Below that you think the mud would begin to accumulate?—I think that is the extreme limit you ought to go. If you reduce it to 100 million gallons during a long period—during a whole summer, say, there would possibly be a danger of accumulation.

23,458. (*Chairman.*) During this summer, 1898, did the river steamers run?—They ran.

23,459. All through the summer?—Yes. They were perpetually getting aground somewhere or other.

20,460. Did you have any complaints, if so, how many, and when?—We had no formal complaints this summer. Last summer we had a great many. Several steamers went aground, but I suppose they have got tired of making complaints, as they find nothing comes of it.

23,461. Wait a minute; we will appreciate their complaints in a moment. You mean to say you had complaints in 1897, but you had not any in 1898?—We have not had complaints of the water not being sufficient for the navigation of steamers in 1898.

23,462. When did you have complaints?—Last year we had some, and the year before—every year nearly we had some; but this year I do not think we have had a formal complaint at all.

33,463. This year has only had thirty days to run?—I beg your pardon; I mean this last dry season.

23,464. That is, you had no complaints in 1898?—Not in our office; but there have been public meetings held in the parishes adjoining the river, complaining of the state of affairs. These meetings have resulted in a sort of scheme having been brought forward to make a lock and weir at Wandsworth. That scheme has actually been brought forward as a proposition to remedy this state of things.

23,465. (*Sir George Bruce.*) Then you know there were only 40 million gallons going over Teddington Weir during part of last season?—Yes, that was so.

23,466. And that is the season in which you had no complaints?—I do not think we had any formal complaints. I do not remember that we had any at all.

23,467. (*Mr. Mellor.*) But you had a good many the year before, had you not?—Yes, and also we heard, of course without letters coming to the Board, that there were complaints that these steamers did stick several times in the mud, or the banks rather, and could not get along.

23,468. People having made complaints and not getting any remedy, I suppose they thought it was useless to complain to the Conservators?—Probably that was really the reason. There is no remedy to make that I know of.

23,469. (*Chairman.*) What answer did the Conservators make to the complaints?—I cannot quite recall that. I really do not remember what the answer was.

23,470. Have you got the flow of the Thames in 1897?—Yes, we have got the flow in every year.

23,471. Just give me the flow during 1897; I should like to see that in comparison with 1898?—1897 was a pretty good year for water; there was a pretty good amount of water in the river in 1897.

23,472. I see that in 1898 in the month of September the Thames was under 100 million gallons every day, but four, namely, the 15th of September, when there were 101·2 million gallons; the 22nd September, when there were 100·9 million gallons; the 29th September when there were 117·7 million gallons; and the 30th September, when there were 128·1 million gallons. Did the steamers run all through that month of September?—Yes, they ran all through then.

23,473. Did you hear of any catastrophe?—I heard of their having been aground a very great number of times at different places. Sometimes they were aground for hours at a time and the passengers had to be landed in boats; they could not get along at all.

23,474. In that month I see the Thames ran down on the 13th of September to as low as 42·5 million gallons a day over Teddington Weir?—Yes, that was the lowest day we had.

23,475. Whereas in 1897, looking through your list, I do not see a single day but one in September when the river was below 400 million gallons a day. Yes, I

think there are one or two more?—1897 was a very good year for water.

23,476. That was the year of the complaints?—I really cannot say exactly the dates of these complaints; I did not know I was going to be asked that question; but generally speaking every year we have had a certain number of complaints that there is not sufficient water for continuous navigation up there. This last year I have heard frequently that these steamers got aground and could not get along and had to land their passengers in boats in many cases. From that one concludes that the water is not sufficient for the navigation.

23,477. The difference is enormous between September 1897 and September 1898?—Yes, it is.

(*Chairman.*) In September 1897 on the 16th there were only 374 million gallons over Teddington Weir; on the 25th 399.2 million gallons; on the 27th 597.2 million gallons; and every other day it was over 400 million gallons, going up to 818.5 million gallons.

(*Mr. Pember.*) Have you got a copy of those figures?

(*Witness.*) I have not.

23,478. (*Chairman.*) I will hand them to you in a moment; I am seeing them for the first time myself, and I am only trying to follow them. (*To the Witness.*) In fact September and October of last year were far worse than any other month in the two years 1897 and 1898?—They were the very worst months we ever had; they were extremely bad months last year.

23,479. In your 18 years experience you do not remember two such months?—Nothing like it. If your Lordship will look at the earlier figures you will see that at once.

23,480. Have you got the figures for 1896 as well?—Yes. I have got the figures right away back to the 80's.

(*Witness handed in a book of the gauges at Teddington Weir to the noble Chairman.*)

23,481. (*Chairman.*) In 1896 in the month of July I see the flow over Teddington Weir was under 200 million gallons?—Yes. In 1895 or in 1893 there were several months when it was under that amount. I think.

23,482. 1893 was a much better year according to this book than 1898—that is September was the only month when it really fell below 200 million gallons at Teddington Weir as a rule. I think we had better have the tables of the gaugings from 1890 to 1898?—I should be glad to furnish a complete set.

23,483. (*Major-General Scott.*) Were they not handed in to Lord Balfour's Commission?—They were handed in up to date; since then we have extended them.

23,484. (*Chairman.*) Then we will take them from 1893 to the end of 1898?—Yes.

(*The Witness handed in Tables. See Appendix Y, 1.*)

23,485. (*Mr. De Bock Porter.*) May I ask whether the Resolutions you have read to us express the unanimous opinion of the Conservators?—I cannot say what the 1892 Resolution was; I do not remember that; but on the one which was passed on the 23rd January there was a division at the Board, and I think the figures were 22 for the Resolution and 4 against it.

23,486. (*Sir John Dorington.*) I suppose the Board had before them the evidence that we have lately been taking?—It has always been furnished to the office; I really do not know whether they have gone through it.

23,487. (*Chairman.*) Have you, yourself, read it?—Yes, I have read it personally, but whether the Board have read it I am not prepared to say.

23,488. Had you read it before that Resolution was passed?—Yes, as it has been published.

23,489. (*Mr. Balfour Browne.*) I think there are four representatives of the Water Companies upon the Conservancy?—Only one.

(*Mr. Pember.*) I suppose there is no harm in saying who the four, who voted against the Resolution, were.

(*Mr. Balfour Browne.*) You had better not go into that.

23,490. (*Chairman.*) There is a great preponderance of opinion in favour of the 200 million gallon limit?—The division was 22 to four; these were the figures.

23,491. Do you know whether the four dissentients wanted more than 200 million gallons or were content with less?—I cannot answer that question.

23,492. Were you present at the discussion, if there was one?—I was.

23,493. Did anybody advocate more than 200 million gallons?—No.

23,494. Then we may take it that it was the other way. I see even in this disastrous year, 1898, it was only during the three months of August, September, and part of October, that the Thames got below the 200 gallons?—That is so.

23,495. Provided you have your 200 million gallons going over Teddington Weir the Conservators do not care how much excess there is for the Companies to take?—No, I think not.

23,496. If it runs up to 300 million gallons or 400 million gallons, it is immaterial to them?—I understand the resolution to be that if they are guaranteed the 200 million gallons at Teddington, anything over that may go to the water companies in any way they like.

23,497. (*Sir John Dorington.*) When you have got the 200 million gallons does that make a fair stream between Teddington and Richmond, and is the river kept in a healthy condition with it?—Between Teddington and Richmond there is a weir that keeps up the water. It does not affect the level at all; it affects the current.

23,498. It affects the current, that is the point?—I say that that would be sufficient to keep up the river, because, of course, during a certain part of the day you have the tidal water which scours down that reach.

23,499. (*Chairman.*) Up as far as Teddington?—Between Teddington Weir and Richmond there is a certain amount of tide allowed to run out which keeps up a scour—something like half the tide.

23,500. (*Sir John Dorington.*) And keeps the water sweet?—You can use the water every day.

23,501. (*Major-General Scott.*) You have placed no limit on the number of days on which the river could be maintained at 200 million gallons without injury. but, of course, you bear in your own mind the fact that as a matter of course a vast quantity of water must come down anyhow in flood?—Yes.

23,502. Notwithstanding any practical quantity which the companies could take?—Of course, in some years the companies never could reduce it down to 200.

23,503. You do not start with the theory that if the river was limited to 200 million gallons a day for 365 days in the year that it could go on?—No, I do not start with that theory at all.

23,504. That is what I mean?—I take it that there are a considerable number of days when the Companies might pump all they want and leave a very large amount beyond the 200 million gallons. That is absolutely proved by the figures, I think.

23,505. You look at it in a practical way, and you know that a vast quantity must come down?—May I just say that in the year, 1898, the total quantity which came down the river was 234,421 million gallons.

23,506. (*Chairman.*) That was below the average?—That is the total quantity during the year.

23,507. In the whole year 234,421 million gallons?—Yes.

23,508. (*Major-General Scott.*) That is about half the average?—The average daily quantity was 642 millions.

23,509. (*Mr. De Bock Porter.*) May I ask whether the Conservators are of opinion that when the river is running very low, and the Companies would, by taking their full supply of water, reduce it below 200 million gallons, the Companies ought to abstain from taking the water, so that the 200 million gallons should run over Teddington Weir?—That is so, undoubtedly.

23,510. That is their opinion?—At that time they should draw from their reservoirs. That would be the object in constructing their reservoirs—the only object, in fact. When the water fell to that minimum the reservoirs should be drawn upon; when it was above—whatever it was above, between the 200 million gallons and the actual flow—they should be allowed to take.

23,511. But they ought to abstain until it reaches that limit of 200 million gallons?—That is so.

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23,512. (*Major-General Scott.*) You left the Southwark and Vauxhall a privilege which it had before of taking any quantity up to 24,500,000 gallons whatever might be the state of the river, did you not in their Bill—I mean you did not oppose the continuation of that privilege?—I think in the Bills which have been before Parliament the Conservators have not opposed the exercise of those privileges which the Companies have already got, which extend up to 130 million gallons.

23,513. You raised no objection to the continuation of these privileges?—No.

23,514. You had an opportunity of course, of dealing with the matter in the case of the Bill promoted by the Southwark and Vauxhall Company in this last year?—Yes, of course.

23,515. (*Chairman.*) There they imposed a limit?—That was for the excess quantity.

(*Major-General Scott.*) But they allowed the privilege which the Company had before of taking 24,500,000 gallons, without any reference to the state of the Thames, to continue.

(*Witness.*) The difficulty which the Conservators have, to some extent, in dealing with the matter is that they have to deal with so many Companies whose interests are not absolutely identical. I may say that when I gave evidence before Lord Balfour's Commission, the idea was that we should deal with one body, and that the privileges which the Water Companies now have of taking out the 130 million gallons irrespective of the flow would be abolished; and that they would give us in exchange for what they got the 200 million gallons as a real minimum.

23,516. (*Chairman.*) I forget the figures of actual draught from the Thames in September and October of last year. Do you know what the companies were drawing from the Thames in September and October of last year, or let me say August and September, as those are the two lowest months?—In October they drew a daily average of 129,570,000.

23,517. (*Major-General Scott.*) What in July?—131,271,000.

23,518. (*Chairman.*) In September?—In September it was very nearly 137 millions—136,903,000.

23,519. Then those quantities had been subtracted from the natural flow of the river over and above what came over Teddington Weir?—Yes, that is so.

23,520. Therefore, if you added those quantities to what your table shows coming over Teddington Weir in 1898, you would have got up to the 200 million gallons in every month, and considerably more?—I can give you exactly the figures. This is a table showing the gaugings at Teddington, and the quantity abstracted by the water companies and those two added together, give you the natural flow at Teddington.

23,521. (*Sir John Dorington.*) Daily is it?—Yes.

23,522. (*Chairman.*) It is for July, August, September, October, November, and December, 1898?—Yes, it covers the very dry months of last summer.

(*The Witness handed in Tables. See Appendix Y, 2.*)

23,523. (*Major-General Scott.*) Why was it that the Conservancy did not make the proposition that in consideration of the Southwark and Vauxhall getting this excess quantity of water in 1898, they should surrender the privilege of taking water, notwithstanding the condition of the river, up to 24,500,000?—I can hardly answer that question.

(*Mr. Pope.*) You will remember, sir, that there is a payment made by the Companies to the Thames Conservancy. They have always tenderly avoided disturbing that agreement for the payment of a contribution by the Water Companies, and therefore they have steadfastly, as Mr. More says, declined to interfere with the existing *status quo*, but have uniformly insisted that any further privileges should be subject to the limitation which he has made.

(*Sir John Dorington.*) Is that per million gallons taken, or is it a fixed charge?

(*Mr. Pope.*) It is a fixed charge—an agreed charge.

(*Sir John Dorington.*) A fixed charge on their authorised take?

(*Mr. Pope.*) Yes. You will find the whole thing set out in the Schedule to the last Thames Conservancy Act.

(*Mr. Pember.*) I do hope that the members of the Commission will bear in mind that that 24,500l. is not a payment for so many gallons of water; it is a contribution to the funds of the Conservancy, because we are so interested in the purifying of the water.

(*Mr. Balfour Browne.*) The amount has curiously gone up as the quantity of water has increased?

(*Mr. Pember.*) Of course, in proportion as we take 10, 20, 30, or 100 millions so does our interest in the purification of the river go on too.

23,524. (*Chairman.*) From whatever cause the amount contributed to the Thames Conservancy grows with the amount of water taken. The table you have handed in shows the amount abstracted by the water companies, the amount gauged at Teddington Weir; and, secondly, the natural flow, which is the sum of the other two, in July, August, September, October, November, and December 1898?—Yes.

23,525. I gather from that, that there are but very few days—one day in August and six days in September—when even during last year the natural flow of the river was below 200 million gallons a day?—That is so.

23,526. (*Mr. De Bock Porter.*) Does the payment by the Water Companies constitute the principal item of income of the Thames Conservancy?—It is a very large proportion of the upper navigation fund.

23,527. What proportion?—I can give you the exact figures if desired; I really cannot tell you off hand.

23,528. (*Chairman.*) Cannot you say whether it is very nearly the whole?—It is, I should think, more than three-fourths of the whole.

23,529. (*Mr. Claude Baggallay.*) That is of the upper navigation fund?—Nearly all the contributions of the Water Companies are carried to the upper navigation fund; that is, the fund for the works above Staines.

23,530. (*Chairman.*) I suppose that the revenue which you get for the upper navigation is what enables you to keep the water of the Thames reasonably pure?—That is the theory on which the contributions are made. It enables us to look after the purification of the Thames and the tributaries, and to maintain the works in efficient order. Of course, the weirs and all those things are very important for the purification of the water. As the water falls over the weirs it gets aerated and improved in quality, and altogether the Conservancy think that they give value for the money which they get from the Water Companies.

23,531. Nobody would dispute that. The Conservators have done a great deal to diminish pollution in the Thames, have they not?—They have done an enormous amount.

23,532. Have they done anything to deal with the water of the Wey as it comes in?—Yes.

23,533. I think I have seen an account of a public meeting lately about the waters of the Wey, have I not?—The Wey has been dealt with as a tributary in the same way as every other tributary. Of course we do not pretend that the whole thing is perfect yet, but it is being gradually worked up, so I hope in the course of a very short time that there will be very little pollution indeed getting into the river.

23,534. Do you believe that you are making the Thames water better every year?—I think there is no question whatever about it; it is so, undoubtedly.

23,535. (*Mr. De Bock Porter.*) The fact of your deriving so large a proportion of your income from the Water Companies makes it a little awkward, does it not, in your negotiations with the Companies with reference to their abstaining from taking water when the river is very low?—No. I think the Conservators are prepared to be very firm in the matter. They want the 200 million gallons, and they have always said so. I do not think it would affect them in the least degree.

23,536. Not the fact of three-fourths of your income coming from that source?—I really do not think so. We have got the income, and I do not see why it should.

23,537. (*Chairman.*) You have no personal interest beyond any other Londoner in the operations of the Water Companies, I suppose?—Not the least.

23,538. I am afraid you find that the farmers and residents along the Thames do not appreciate your

efforts as much as the water consumers of London, do they?—I suppose a certain amount of complaint has been made that we have been rather strict, on some of those people who pollute the small streams flowing into the tributaries; but, on the whole, I think the Conservators have worked the Act with as much moderation, and as much consideration for these people as possible. We are trying to get every bit of pollution out of the river; of course it is rather hard on some people, but, on the whole, I think we have been very successful.

23,539. In your view, are the sewage works at places like Staines, and other towns on the river satisfactory and efficient?—Yes, I think they are, that is to say, if they are constantly watched. It must be, of course, borne in mind that these sewage effluents are very liable to great variations, so they want a considerable amount of watching.

23,540. Do the Conservators take samples of the sewage effluents and test them from time to time?—Yes, we have an analyst who tests these samples which are periodically taken, and reports on them very frequently.

23,541. Who is he?—Mr. Groves is our analyst.

23,542. Does he test for bacteria as well as for animal impurity—organic impurity?—I think it is principally organic impurity that he tests for. I may say the Conservators have a meeting every fortnight of a Committee that specially deals with this question of the purification of the river.

23,543. And I suppose deals with cases of any complaint made of any particular sewage farm or any particular source of pollution?—Every complaint of every source of pollution that is possibly brought before them by their own inspector.

23,544. (*Major-General Scott.*) Take the case of pollutions from farmyards, liquid manure, and that sort of thing, going into a rivulet or some small stream, how would you deal with a case of that sort. What would you try to make a farmer do?—We should do the best to make him keep it out of these streams, to try to pass it through some sort of a settling tank where the worst of it can be got rid of, or some other means of dealing with it.

23,545. (*Chairman.*) You can do nothing with manure laid upon the land I suppose?—No of course you cannot deal with that.

23,546. Is that not a source of pollution? Does not a violent rainfall coming upon freshly manured land wash a good deal of pollution into the Thames?—I think the analyses which are taken of the water show that there is very little pollution of the Thames now.

23,547. (*Mr. De Bock Porter.*) At the time of flood I suppose a large quantity of sewage goes straight into the river without passing through the different processes which are usually employed?—I should think there would certainly be a worse state of affairs as far as concerns the amount passing into the river, but then of course there is a very much larger quantity of water with which to dilute it.

23,548. (*Chairman.*) The question is whether the flood causes a certain amount of sewage matter to go straight into the Thames, without passing through the land or whatever the means of filtration or purification may be?—It hardly goes straight into the Thames.

23,549. (*Mr. De Bock Porter.*) When there is a flood and a very large quantity coming down you surely must have more than the sewage works can deal with?—Stormwater do you mean?

23,550. Yes?—I suppose to some extent that would be increased.

23,551. (*Chairman.*) How can that be? As I understand these sewage works, all that is in the sewers is put upon a given quantity of land?—I think I may explain it in this way, that when these sewage works are designed they are designed to take a certain quantity of sewage, but they are not designed to take an excessive quantity which may be caused by the rainfall being mixed with the sewage, unless it is the case that there is a separation of the sewage from the rainfall. When the two are combined in one system a heavy rainfall will cause a very large flow into the sewers, which is more than they will carry, and to obviate any what you might call blowing up or bursting of the sewers, they have what they call storm outflows, that is to say, certain openings where the sewage flows out when it gets to a level above the

sill; so that to that extent there would be more sewage going into the river. *Mr. C. J. More.*

23,552. That seems to point to this, that you ought to have separate conduits for your storm overflow and for your sewage?—That is the perfect system no doubt.

23,553. Do you ever aim at establishing that system?—The Conservators have no voice whatever in the matter so far as the system which is adopted is concerned.

23,554. They have a voice to this extent—they can say you must not let this storm overflow charged with sewage come into the Thames—do what you like to stop it?—Of course to this extent they have a voice. This is what they have to do; they have to take these effluents and have them analysed and if they contain what is called offensive or injurious matter they can proceed against the authority who puts it into the river.

23,555. As I understand you, in the case of a storm or a series of storms, it is not the sewage effluent, but some overflowing stream containing sewage that is in question?—It is this, that the sewage of the town is mixed with a very large quantity of rainfall.

23,556. And it comes out, you say, through the same conduit?—Yes, and so sewage probably would come out to some extent more than it would otherwise.

23,557. Do you ever test or control that storm overflow?—I do not know personally whether they ever did bring a prosecution on account of this storm water or not; but of course to deal with the whole sewage mixed with rain water would entail an enormous expense.

23,558. (*Major-General Scott.*) It is inevitable, is it not, with most systems of sewage that the rain and sewage mixed should be allowed to go direct into the stream?—It is with every system. With the London system it is just the same thing.

23,559. (*Chairman.*) The proper system would be that the storm water should be kept separate from the sewage?—That is the proper theory no doubt, but it is not adopted as a rule.

23,560. (*Mr. De Bock Porter.*) Do you know whether any towns have adopted the separate system?—I cannot say offhand.

(*Mr. Balfour Browne.*) As a fact some few towns have on a small scale.

23,561. (*Chairman.*) None on the Thames that you know of?—I do not recall any on the Thames.

(*Sir John Dorington.*) Norwich is separate.

23,562. (*Major-General Scott.*) They find the road washings are at the first flush as foul as any sewage, do they not?—I suppose the first washing down of a flood is not as good certainly as the water ought to be, but after a little while there is an improvement.

23,563. The first flush of the street washings of a town by rain would be as foul as any sewage, would it not?—It would probably be very largely diluted no doubt by the rain, but still it would be undoubtedly objectionable water to drink.

(*Mr. Balfour Browne.*) In London the first of the washings of the streets is worse than the ordinary sewage.

23,564. (*Chairman.*) Is not Mr. Groves the chemist of the Conservancy?—He is.

23,565. I think he told us that you might take the first days' flood with impunity. You, yourself, have no personal knowledge of the proportion of sewage in flood waters on the first, second, third, and fourth days in flood?—No, I have no knowledge personally of much of the sewage question at all. It is not in my department.

23,566. Mr. Groves told us that the Water Companies might be allowed to take flood waters with perfect safety if they were placed in a large storage reservoir; and he expressed the opinion that it would be found that flood waters would give after subsidence better water than the water taken from the Thames when it was not in flood; you have no opinion about that, I understand?—None whatever.

23,567. You have told us that in your opinion Richmond Weir would be deteriorated if only 100 million gallons came over instead of 200 millions?—Yes, that would be so.

23,568. Now, what I want to ask is this: Do you think it would make any difference in the part, say,

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between Richmond Weir and Molesey, or above the locks, if only a smaller quantity came down?—It would have this effect, that it would reduce the current very considerably, and reduce it down to a point at which it would be really almost stagnant water. If you reduced the flow to 100 million gallons at Teddington, you would reduce the current to, I think, about one-tenth of a mile an hour between Molesey and Teddington.

23,569. (*Sir George Bruce.*) What is the present current there?—It is probably less than half a mile, or something like that.

23,570. (*Chairman.*) Half a mile an hour?—Something like that. In the summer it would not be so much—it is not very much, but that is what it would be, calculating the sectional area with 100 million gallons.

23,571. (*Mr. Pope.*) What is it with 200 million gallons?—I think about twice as much.

23,572. (*Mr. De Bock Porter.*) You reduce the speed one-half of the flow of the river?—Yes, that is about what it is.

23,573. If it is so very slow, does not it conduce to vegetation?—No, the water is too deep for that in the reach. If the water is over 6 feet, or so, I do not think the velocity of the current has much to do with the vegetation of the Thames. If it is less than 6 feet, you generally find it has.

23,574. (*Chairman.*) The same quantity of water would be in the river whether the flow is rapid or slow above the locks. You do not reduce the quantity of water in the river above the locks?—No, the same volume would be there, because it is maintained at one level; but it would travel at a less velocity.

23,575. Of course, the same proportion of sewage effluent would be coming into that comparatively stagnant water?—That is so.

23,576. Do you think that would make any difference in the quality of the water?—I think that undoubtedly, if you lower the current practically to a very slow current; indeed, these sewage effluents that come in from Kingston and the Molesey Sewage Works will have more chance of making the water objectionable than if the current was sufficiently strong to carry the water down more rapidly.

23,577. But nobody takes water for drinking between Molesey and Teddington?—No, not for drinking. I may say that nobody does practically, but there is the power of taking water for drinking in two of the Water Companies still existing at one of these intakes—not that they exercise it at present, I believe.

23,578. (*Mr. Pember.*) At Seething Wells, you mean?—At Seething Wells there is still a power in the Chelsea and Lambeth companies to take water if they choose on an emergency.

23,579. With the consent of the Local Government Board?—With the consent of the Local Government Board.

23,580. (*Major-General Scott.*) No, not with the consent of the Local Government Board?—Is that not so?

23,581. They have to report to the Local Government Board that they are taking it.

23,582. (*Chairman.*) That is all?—That is so, perhaps.

23,583. And that is only in cases of emergency. I forget whether that is defined in the statute?—I am only talking of drinking-water. You might get this water in a condition which was rather objectionable to the inhabitants on the banks if you allowed sufficient sewage effluent to get in there and not be carried away with the running stream.

23,584. I thought we started with the datum that the sewage effluents were innocuous?—I do not think sewage effluents are innocuous at all if they are not carried away in running water, however good the effluent may be. Unless it is a wonderfully pure effluent it must be put into running water and carried away before it is really safe. If you put it into a stagnant pool, eventually it must have some effect on it. The Brent is a very good illustration, on a small scale, of what happened by putting sewage effluent into a dry stream.

23,585. But what makes the Brent so foul is that it gets sewage effluents which are not treated, is it not?—They pretend to treat them. I do not know whether they do.

(*Mr. Pember.*) It is that pretence that makes the whole difference.

(*Mr. Pope.*) Perhaps it might be useful if I were to give your lordships exactly the position of the payments which are made by the respective Water Companies. The agreements were: An agreement in 1852, which had reference to the take of 200 million gallons, which was mentioned at that time as the limit of the various Companies. Then, in the Act of 1866 and in the Act of 1878, the Thames Conservancy Acts for those years, there were greatly increased payments made, authorised by statute, but no increased take of water, the payments being supposed to remunerate the Thames Conservancy for the additional duties in the way of purification, which those Acts put upon them. Then the agreements of 1886 were entered into between the Companies, which gave an increased payment for an increased quantity of water, and raised it up to 24½ million gallons. Then there is the Act of 1894, the schedule of which confirmed those agreements, and deals with the question of payments. That Act greatly increased the payments by the Companies, and put further duties upon the Thames Conservancy, but did not increase the rights of the Companies to take more water. So that the actual relations between the payments and the quantity of water taken does not exist except in the cases of agreements, and the scope and purpose of the payment is to enable the Thames Conservancy to maintain the purification of the river, which is their interest and the interest of the Water Companies combined. I believe the payments by agreement, which are the payments by agreement of 1852 and 1886, are about a third of the whole payments which are either made by agreement or under the force of statute.

(*Chairman.*) I do not think any of us suppose that the Conservancy are influenced by the fact that they receive money from the water companies.

(*Mr. De Bock Porter.*) No.

Cross-examined by Mr. BALFOUR BROWNE.

23,586. Just one or two questions. As I understand, if this flow is diminished the current is diminished too?—Yes, undoubtedly.

23,587. You say that sewage put into stagnant or semi-stagnant water is apt to become offensive to people living near it whether it is used for domestic purposes or not?—I think there is that danger, certainly.

23,588. Is it a fact that there is what is called secondary decomposition in an effluent when it is put into water?—Yes.

23,589. Just let me ask you about another matter. You stated quite truly that these sewage farms and things of that sort were apt to beget a nuisance unless they were carefully watched?—That is so.

23,590. And, as I understand the money that you receive is partly spent in watching, as far as you can, the whole of the Thames Valley?—Yes. The Thames Valley is divided out into districts, each district has an inspector and sub-inspectors, and they go periodically all over the district looking out for any visible source of pollution, and taking samples from the works where the sewage is treated.

23,591. I take it that without that careful watching the water at the intakes of the water companies would not be fit to drink?—There is no doubt that the watching has a wonderful effect in purifying the water.

23,592. Are you aware that even notwithstanding this watching there are very often accidents. Was there an accident recently when a sewer burst near Sunbury, and when the whole of the sewage came undiluted into the Thames. Do you know that?—No, I do not know that.

23,593. (*Chairman.*) But that is a thing that your inspectors would surely have known if it had happened, is it not?—Quite so; no doubt they know it at the office.

23,594. (*Mr. Balfour Browne.*) It is not within your own particular knowledge I take it?—That is it.

23,595. Now, you said something about your anxiety being to have 200 million gallons as a real minimum. Did you mean that you wanted the Companies when it fell below the 200 million gallons to make it up to 200 million gallons. Was that what you wanted?—No, I do not think we went so far as that.

23,596. What did you mean by a real minimum, because I do not understand you?—The real minimum

is this that at the present time the Companies may take up to a certain amount—130 million gallons irrespective of what is coming down the river. The limitation only applies to what we call the excess quantity.

(Chairman.) 55½ millions.

(Mr. Balfour Browne.) Yes. But you see it is not a real minimum if the Companies merely abstain from taking water when it falls under 200 million gallons. One day last year it fell to under 42 million gallons.

(Chairman.) No, it was 42 millions after the companies had taken it.

(Mr. Balfour Browne.) After the Companies had taken their 135 million gallons.

(Chairman.) Yes.

(Witness.) But I may say that last year was the only year, I think when the water ever did fall to anything like that.

23,597. (Mr. Balfour Browne.) Now I find that you have consistently insisted that any diminution below 200 million gallons would be an evil. I find that the Chairman of the Thames Conservancy, Sir Frederick Dixon Hartland, speaking on the Southwark and Vauxhall Bill of 1898, said, "We have most carefully examined the whole matter; of course, having charge of the river for so many years, we have not the slightest hesitation in saying that it would be risky to reduce the minimum below 200 million gallons." That was at Penton Hook, and that, I think, is the same as the 200 million gallons you have been speaking of to-day, is it not?—Yes.

23,598. It is a similar amount, but in fact it is translating it to Penton Hook, instead of to the Thames?—Yes, that is so. It is rather a complicated calculation, but it really means 200 million gallons at Teddington.

23,599. In your view, should not the limit be at Teddington rather than at Penton Hook or Bell Weir?—If the companies were amalgamated and we had to deal with one single board I think you might very well substitute Teddington, but, I think in existing circumstances where we have so many companies to deal with it is better it should be at Penton Hook, where it has been fixed to be by two Acts of Parliament.

(Mr. Pope.) It would be very hard on the Southwark and Vauxhall Company that it should be at Teddington and my friend Mr. Balfour Browne aided the Thames Conservancy in putting it at Penton Hook.

(Chairman.) That is a mere incident of professional life.

23,600. (Mr. Balfour Browne.) You have given the total flow of the Thames last year. The total flow was 23,421 million gallons. That is every drop of water that came down—floods and everything?—Whatever figure I gave was the exact measurement, and that is after the Water Companies, of course, had taken their quantities, which might amount to another 40,000 million gallons, or something like that.

23,601. Was that after the Water Companies?—Yes, after they had taken their quantities.

23,602. That you said came to 642 million gallons a day?—After the Companies had taken their 130 million gallons.

23,603. To take another 200 million gallons, or whatever it is, out of that, would reduce the quantity to a very low figure indeed.

(Mr. Pope.) 442 million gallons.

23,604. (Mr. Balfour Browne.) That is on the average of course?—On the average.

23,605. You mentioned the pleasure traffic. Will you tell me what does a barge draw?—A barge draws 4 ft. to 4 ft. 6 ins.

23,606. Then the barge traffic even in the very lightest class of barges would be stopped if the 7 ins. were taken off the top of the water at Richmond Weir?—Yes.

(Chairman.) Yes, but it could not go up with the 2 ft. 6 ins. with the 200 million gallons.

23,607. (Mr. Balfour Browne.) Even at the present time the water is so scarce that the barge traffic at that particular part of the river is to a large extent stopped, is it not?—It is altogether stopped.

(Mr. Pember.) They only go up on the tide.

(Mr. Balfour Browne.) They have to wait at low water, I think.

(Witness.) They go up with the tide.

(Mr. Pember.) So that in any way they are affected.

23,608. (Mr. Balfour Browne.) Forgive me. Would not it lengthen the time that the barges were delayed if you diminished the quantity of water?—If you had sufficient water at present for the barges to go up, but you have not. As a matter of fact there is no barge traffic up at low water.

23,609. Now there is one thing you did not mention I think. You did say as I understand, that if this flow was diminished there would be a tendency to silt below Richmond Weir?—Yes, I think there would be a tendency during summer months to silt there.

23,610. Supposing all land water stopped, the river Thames would silt up entirely, would it not?—I should be sorry to contemplate the stopping of all land water.

23,611. No, no, just follow me. That is not the proposition.

(Chairman.) If there is no water there would be no river.

23,612. (Mr. Balfour Browne.) It is a fact, however, that if you stopped all land water, although you had the tide coming up once every day, or twice every day, and going down, the Thames would silt up inevitably?—Yes, some of it.

23,613. Is not that so?—It would be a very serious state of affairs if you stopped all land water.

23,614. Would not it silt up?—I daresay.

23,615. Do you know of any tidal creek that is kept open simply by tidal water?—No, I do not.

23,616. (Chairman.) Do you mean to say that every creek on the sea shore silts up?—I think pretty nearly, unless there is some land water coming down.

23,617. No, no, I say a creek with no river water running into it. Do they all silt up?

(Mr. Balfour Browne.) Wherever it is a muddy or sandy estuary they do.

(Sir John Dorington.) Take Portsmouth Harbour.

(Mr. Balfour Browne.) That is dredged, I should think.

(Chairman.) Portsmouth Harbour has a strong stream running into it.

(Witness.) That is hardly an estuary, I think.

23,618. (Mr. Balfour Browne.) Of course, it is not the proposition to do that, but it is the proposition to increase the amount of land water that they can take out, and must not that, at any rate, tend in the direction of silting?—Of course, every gallon you may say, theoretically, would tend to produce less flow to some extent.

23,619. (Chairman.) But which brings down more silt—the land water that is coming down from the land, or the tidal water that is coming up the river?—I should think the tidal water brings up the most.

23,620. (Mr. Balfour Browne.) But when it comes to the end of the tidal influence it lays it down?—Yes.

23,621. (Sir George Bruce.) Which scours out the most, the upland waters or the other?—I think the maintenance of the river is due principally to the floods which come down in the winter.

Cross-examined by Mr. PEMBER.

23,622. As I understand you, Teddington Weir, although it is inconvenient for the purposes of calculation, yet it enables all the calculations to be made?—Yes, it does; you can make them.

23,623. I suppose some alteration in its construction would get rid of the inconveniences even, would it not?—It is quite possible to adapt the weir to the measure ment of the water.

23,624. And it would be no very great matter, would it?—Of course it would cost a good deal of money, but it could be done.

23,625. When you say "a good deal of money," I suppose we ought to know what you think it would cost to make it convenient, and what would be convenient for the purpose?—I should think you would spend 5,000*l.* before you really could make a good job of it.

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23,626. You also mentioned the possibility of compensating you for the loss of the 100 million gallons per day and turning the 200 million gallons into 100 million gallons. But if a tidal reservoir were made, have you considered that question?—When Lord Balfour's Commission were considering this question I did put before them a proposition for making a tidal reservoir up at Richmond to provide for this diminished quantity of water as one means of doing it.

23,627. What sort of sized reservoir do you consider would be necessary?—That reservoir was to be 23 acres in extent and 8 feet deep, I think, the depth being limited by the range of the tide.

23,628. And about what would it have held?—It was intended to hold 50 million gallons.

23,629. That could have been filled and let out every other tide?—Yes, that was the idea, but as it would be filled every tide, it would provide a quantity of 100 million gallons a day.

23,630. If that were done, would it get rid of your objection to the lowering of the minimum from 200 million gallons to 100 million gallons?—It would be a means of course of supplying the deficiency—of making up the deficiency.

23,631. And so it would get rid of it?—Probably it would.

23,632. (*Chairman.*) It would not get rid of your objections to the effect upon the river above the locks?—No, it would not; but, of course, it is possible to deal even with that by carrying the sewage down the lower reaches. You might do that. It is not an impossible problem at all.

23,633. (*Mr. Pember.*) What sort of cost did you put in your own mind for this reservoir at Richmond?—I really did not make an estimate of it at all.

23,634. But I think you had formed some idea of what the cost would be, had you not?—Yes. Probably it would cost a quarter of a million before you had finished it.

23,635. 200,000*l.* to 300,000*l.*?—200,000*l.* to 300,000*l.* I should think in that position.

23,636. (*Chairman.*) Land at Richmond is worth 300*l.* an acre?—It was proposed to put it in the Deer Park there.

23,637. On the Crown land?—Yes.

23,638. (*Mr. Pember.*) Now, passing to another matter, I understood you to say the effect of the difference between 100 million gallons and 200 million gallons going down would be about 7 ins. at Richmond, 4½ ins. at Kew, and that it would disappear at Hammersmith, did you not say?—It would disappear somewhere down the river—Putney, or somewhere like that—I cannot exactly say where.

23,639. Would your objection, so far as navigation goes, be got rid of if there was that half-tidal lock of which you spoke and which you said was the project—would it be got rid of if it were made somewhere about Hammersmith or Putney?—

23,640. (*Mr. Balfour Browne.*) Or Wandsworth?—No, I should not like that—I should not like it at Wandsworth. It has never been gone into carefully. There are a great many questions which would have to be raised by that—the abstraction of tidal water and the effect on the traffic and all that. That would be a very big question.

23,641. (*Mr. Pember.*) Now with regard to the inconvenience to the pleasure traffic. Is there any inconvenience to anyone except those who go in those penny steamers?—The boat people complain that the water is very low and the foreshore exposed—too low for getting their boats in the water and so forth.

23,642. But even maintaining the minimum of 200 million gallons would not prevent the exposure of the foreshore. It would only, as you say, take off 17 ft. on each side of it?—Of course it makes it worse. That is it.

23,643. It makes it a bit broader, that is all. I am asked to ask you what is the method of working Richmond Lock?—Richmond Lock is worked in this

way: Supposing the sluices to be down when the tide rises to a level of what we call half tide, the sluices are raised simultaneously, and then the tide is allowed to flow up as far as Teddington. Then, on the ebb tide, the tide is allowed to flow out freely till the water falls to the same level, 5 ft. 9 ins. below Trinity, which is about half tide. Then the sluices are lowered and the land water, whatever it may be, is allowed to pass under the sluices, but always maintaining the same level.

23,644. In your judgment, does the Richmond Lock have any flushing power?—None whatever.

23,645. None?—Not as at present constructed.

23,646. My friend has asked you a great number of questions about sewage coming into the river from the various towns. I will ask you one general question: Do you think that the Thames Conservancy, as at present constituted and empowered, can make purification keep pace with the increase of the population?—I have no doubt whatever about it.

23,647. No doubt they can?—The powers they have under their Acts of Parliament, and the way in which they exercise those powers, I am perfectly convinced would make the water of the Thames as pure as you can make water in a river.

23,648. (*Chairman.*) As pure as what?—As pure as it can be got out of a river.

23,649. (*Mr. Pember.*) Then you answer my question in the affirmative—that you do think the purification will keep pace with the increase of the population?—I do think so undoubtedly.

23,650. There is one more question, and one only, I think, that I have to ask. At present, of course, as you know, we are bound to take our 130 million gallons (supposing we do take it) all in one day—we are obliged to take it day by day. We cannot average it over six months, say?—No; that 130 million gallons you are obliged to take within 24 hours—the proportion of each Company, whichever Company it belongs to.

23,651. Within the 24 hours, according to whichever Company it belongs to?—Yes.

23,652. Should you prefer that the Companies should be allowed to store, and then average their take over six months, leaving a minimum of 100 million gallons; or would you like the present state of things to continue with regard to the 130 million gallons—which is best for the river. Which would you prefer—would you prefer that the present state of things continued, and that they took the 130 million gallons without storage, as they do now, thereby reducing the flow, as we saw one day this year, they did reduce the total flow to 42 million gallons—or would you prefer a minimum of 100 million gallons, with a power of averaging on the basis of the year 1898?—I should prefer an absolute minimum, a guaranteed minimum of 200 million gallons, and let the companies take the water whenever they please.

23,653. Yes, I understand that, but would you prefer a minimum of 100 million gallons to the present state of things?—I do not want 100 million gallons at all. I thought we were talking of 200 million gallons.

23,654. There is only one other question I think. My friend talked to you about the sewage being put into these stagnant pools, and that there would be secondary decomposition setting in. In the first place, should you call the pool, say between—say, Teddington and Richmond a stagnant pool, considering that it is emptied every tide?—No, not Teddington and Richmond—not at all. Molesey and Teddington—which was the reach we are talking of—are not emptied every tide—that is not emptied every tide.

23,655. Should you call that stagnant?—It is practically stagnant, if you have got only a stream of running water about a tenth of a mile an hour.

23,656. At all events, if sewage is not properly treated, is there any secondary decomposition in the effluents?—I am afraid it would have to be very carefully treated indeed before you could get it without—before you could feel safe about it. Practically, it would be so.

(The Witness withdrew.)

Lieutenant-Colonel AMELIUS RICHARD MARK LOCKWOOD, M.P., called and examined.

Lieut.-Col.
A. R. M.
Lockwood,
M.P.

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23,657. (*Chairman.*) You are chairman of the East London Waterworks Company?—Yes, and in connection with that might I state that, at the time when the late chairman retired it was not contemplated that he should be examined by this Commission. But he is present. He did not wish it to be thought that he had evaded being asked questions in any way. Mr. Banbury is here.

23,658. The impression, if I may venture to state it, is that we have too many witnesses from the East London Company. We do not want to hear three gentlemen from each Company. You had been a director, I believe, some years before you were chairman?—Yes, three years, I think it is, in all.

23,659. You are a lieutenant-colonel in the Coldstream Guards and Member of Parliament for the Epping Division of Essex, as we know?—Yes.

23,660. How many members are there on the Board of the Company?—Nine.

23,661. Have you a committee to deal with complaints?—Yes, we have a committee that meets on Fridays, which we call an "appeal committee" which anybody can attend who has a complaint to make as regards supply or anything of that sort.

23,662. Do you find that the situation of your central office is convenient for your customers?—Yes, we do.

23,663. Where is it?—It is in St. Helen's Place, that is close to Liverpool Street and the big station, and coming out of Bishopsgate Street.

23,664. What is the cost of your management altogether?—We have put it down at 24,650*l*.

23,665. We have already heard that your company began the system of constant supply?—That is so.

23,666. That is, before the London County Council applied the whip, if I may use that phrase, to the other companies?—That is so.

23,667. What proportion of your district is now under constant supply?—I think it is 90 odd per cent. of houses that are under constant supply. We have only just a few houses—I think it is 1,500 altogether, in the whole district that are not under constant supply, and that refers principally to some portion of my constituency at Buckhurst Hill, on very high ground.

23,668. Have you done anything to improve the quality of the Lea water?—Yes, we have. We have made intercepting drains.

23,669. Of course we know there has been a failure of supply—I cannot use any other phrase—last autumn, and on previous occasions?—Yes, unfortunately, there is no doubt we did fail to continue our supply, as it is carried on generally; but it was rather in the nature of a bank that pays as long as it can, and then sends round the corner for some more notes—we did not put up the shutters.

23,670. No, but you put them half up?—We began. We sent round for some notes. We sent to get some more notes, and we supplied our customers as long as we could.

23,671. I need not ask you—I daresay you did your best to mitigate the inconvenience to the inhabitants?—We did our best indeed. I regret it, and I am sure the Board regret the inconvenience that many of the poorest people were put to, and of course we have a number of poor customers.

23,672. It is now pretty clear, that given a year like last year, or even given an ordinary year, your supplies are insufficient to keep up a constant supply to all your customers throughout the summer?—Oh no; I do not think I should like to admit that at all.

23,673. I mean we have had Mr. Bryan here, who estimated that it would require aid to the tune of 24,000 million gallons?—I beg your pardon, but I did not quite understand you. You mean without calling on other companies?

23,674. Yes?—Yes, I did not quite catch it.

23,675. You attribute part of the inconvenience of last year to the removal of cisterns, I believe?—Greatly.

23,676. Do you share the view apparently of the local authorities that cisterns are a nuisance, that they must

be suppressed?—No, I like them. I should prefer infinitely to see cisterns.

23,677. But we have been told that in the class of houses that exist in your district, it is practically impossible to keep the cisterns clean and wholesome?—I really do not see why, because certainly the company are aided by the local health officers, and they are extremely active gentlemen, and I do not see why they should not visit the cisterns the same as they look after the drains and other things.

23,678. But we have had some of them before us, and they did visit the cisterns, and found them full of mud and mice?—Then they did not visit them often enough. I cannot see that there is any more difficulty in inspecting a cistern than in inspecting privies or drains myself. It would certainly have obviated, I was going to say, nearly the whole of the inconvenience to our poor customers if they had had their cisterns. Indeed, I have often wondered whether it would not pay us to provide cisterns in some places, only they would probably sell them, or boil their fish in them, or something like that.

23,679. Do you find that cisterns have a habit of disappearing in your district?—In a certain class of house I am afraid there would be that tendency unless they were looked after.

23,680. That would be very expensive, would it not, to keep watching your cisterns day and night?—Yes.

23,681. It does not seem practicable. Do you refuse to supply houses where there are no cisterns, to begin with?—Yes, to lay them on.

23,682. You have a remedy, I suppose, if the cistern is subsequently removed. I think we have gone into that question?—Yes, I believe we have.

23,683. But you never exercise it?—No.

23,684. (*Sir John Dorington.*) Have you a right to insist on a cistern?—Yes, I believe we have. It would be within our powers to insist on it.

23,685. (*Chairman.*) We have gone into that. Now, I had better go with you straight to what is the material point for us. Are you willing or unwilling sellers of your undertaking?—We are unwilling sellers; but, of course, if Parliament should so decree we should be obliged to part with what, I believe, now is an improving and growing concern.

23,686. Have you at all considered the sort of terms upon which you think it would be fair that your undertaking should be acquired?—I presume that if we were to be purchased we should be purchased under the Lands Clauses Act.

23,687. Why do you pin your faith to the Lands Clauses Act?—I will tell you. It is for three reasons. In the first place, because I believe I am right in saying that it is the recognised law of the land as regards this sort of undertaking, and that it provides for the value of the land to the owner—not necessarily at its market value or its value to the purchaser, but its value to the owner, and I can quote I think a learned gentleman who wrote on water subjects, to explain the matter.

23,688. Yes, we know that is the principle of the Lands Clauses Act. But is there any other reason?—That is the first reason why. Then the second is because it provides a recognised and well considered machinery for assessing the value; thirdly, because all its provisions have been contested before the judges and the points settled; and fourthly, that wherever a corporation has compelled a water company to sell, this Act has always been the one adopted.

23,689. Have you considered the various arbitration clauses that have been proposed by the London County Council from time to time. There are three or four forms of them I think?—No, I could not say that I have been through those, but all I maintain is, that if you have to sell under a different form of procedure, you would have to issue instructions of different sorts that have not been tested, to this arbitrator, instead of his proceeding on fixed and well-known lines.

23,690. I do not know whether you feel any difficulty in giving us your opinion as to whether or not the purchase of your undertaking on the terms of the Lands Clauses Act, would or would not be financially expedient for the water consumers and for the ratepayer.

Lieut.-Col. A. R. M. Lockwood, M.P.
 30 Jan. '93

Of course, I have a delicacy in asking any chairman of a water company to answer that question unless he likes?—Whether it would be financially expedient?

23,691. Yes, whether it would be financially expedient for the water consumer that your Company should be bought by some public authority?—First of all it would depend upon who bought them. Given a practical body, it would be simply a question of management in that case. In one case I feel practically assured that the consumer would not benefit.

23,692. What case is that?—That would be the case of the London County Council.

23,693. Why is the purchase by the London County Council to be put in a black category?—If I may say so without wishing in the least to be offensive to the London County Council, I really do not know—

23,694. (*Mr. Balfour Browne.*) There is something awful coming?—No, it is nothing, really. I was going to say that I look upon them as the Jack Cades of the 19th century. What they have done is this: they have gone to the consumer of London, and they have said practically exactly the same. "Be brave; your leader is brave, and vows reformation. There shall be in England sold seven halfpenny loaves for a penny. The three-hooped pot shall have ten hoops, and I will make it a felony for any man to drink water from the private water companies." That is what they have practically done to the consumer. They have told him it would be to his benefit in that way. If they had looked into the question, they would have known perfectly well that they would have been in the same position as we have been in or any other Water Company has been in, and that they would very likely be in an equally difficult position, and that is the reason why I say that if we were to be purchased by the London County Council I honestly believe—it may be bigotry on my part, but I do honestly believe it—that the consumer would not be any better off, but rather worse off, than he is at present.

23,695. (*Chairman.*) I have a difficulty in following you. I am assuming, of course, that the arbitrator is fair, and that he discharges his duty properly. Then he would not make the London County Council pay any more than any other purchaser?—No, but I was saying I should be more unwilling to sell to the London County Council than I should be to anybody else.

23,696. Because you think what?—Because I think they have misled the public—not meaning to of course—but that they put their case in such a manner that the ratepayer really believes at the present time he would have a sort of halcyon days then.

23,697. But I do not understand your opinion to be that the London County Council would make any less advantageous use of the undertaking if they bought it than any other purchaser. It is only that you think that they are disqualified from being a purchaser at all by reason of some misdeeds in the past?—Not only that, but I believe from their constitution and political essence, they being composed, as I believe, of a political body, that they would not act to the advantage of the consumer as water directors.

23,698. Why should a body of representatives neglect the interests of the people whom they represent?—Would neglect them? They would be unable to deal with them. It is a highly intricate matter, and one that requires, of course, from an ordinary individual a tremendous lot of attention and care *quod* water. They would have to deal not only with water, but with all those other material things that they look after.

23,699. But there are a number of Corporations that have bought the water undertakings of their districts?—Yes.

23,700. They consist of much the same sort of element as the London County Council, namely, gentlemen who have made themselves agreeable to the constituents of the various wards of their district?—I do not think there is any other body that I know of (of course your experience is greater than mine, I know) but I should doubt if there is any similar body dealing with a similar gigantic population.

23,701. That is true. There is no such population as that of London, but however, you have got considerable populations in Birmingham, Manchester, Liverpool, Glasgow, and other towns where the Corporation has bought the water undertaking and managed it?—Not such a big thing as this.

23,702. Where is the limit, in your judgment, where a corporation, or a body of representatives, may safely be entrusted with the management?—I should not like to say. I have not thought on the question. I could not say that.

23,703. Then what is the ground of your objection to the London County Council being the purchaser, I repeat. Is it because you think they have used misleading arguments in support of purchase in the past, or because you think that their management will be bad in the future?—Both of them. I think they have misled the ratepayer, and I do not believe that they would be able to deal effectively with it in the future.

23,704. The ratepayer in East London has responded rather actively, has he not, to these solicitations?—Yes, he has. He has responded very actively to what the London County Council has said.

23,705. And he has had considerable inconvenience to put up with in the past?—Yes, he has.

23,706. But you say he would have had just the same inconvenience if the County Council had been in your shoes?—I do.

23,707. Now to come back, dropping for a moment those, what I may call personal considerations, why should there not be a financial advantage ultimately to the consumer, in having his water-supply managed by a body whose object is not profit to its shareholders, but the best state of things possible for its constituents?—Given management there might be. I do not quite see myself why he should get any advantage. What I understood your Lordship to mean was this: Given a body that did not have to work for a dividend.

23,708. Yes—whose sole object was to get the water-supply as good and as cheap as possible, why should not all this extra prospective increase of income that you contemplate for your company go ultimately to the advantage of the consumer, if it was in the hands of a public authority, instead of being in the hands of a private company?—It might be if the management was equally good.

23,709. Can you give us any help in the decision of that question, which is the main one we have to decide, namely, whether there will be a financial advantage to the customers, to the water consumers, if the undertaking is transferred from a private company to a public authority?—I cannot.

23,710. Have you at all considered the methods of purchase that would be least onerous to the public?—I have read carefully the scheme of Mr. Banbury's.

23,711. What do you say to that?—I think it is a very rough scheme, of course. He said so, I think.

23,712. Yes?—But I honestly confess it is rather a taking one at first sight. I think that the public, who are always frightened at dealing with cash, especially in such large sums as he mentioned, say 40 millions, would very likely think it was a good one, and I do not think would be a bad one myself.

23,713. Would your Company think it a good one?—The only person I have spoken to is Mr. Banbury, the late chairman of our Company, and he rather agrees with me that it would be, roughly speaking, a good scheme. I think that the shareholders would probably accept it if we advised them. But I could not answer for that, because I do not think I have ever asked one of the other directors. But I think it is a fairly good scheme. Of course it may be a great question as to whether he would think he had got his prospective value sufficiently taken into account. Personally speaking, I think he would.

23,714. As to that question of prospective value I do not know whether you can assist me about this, but as I view it it is this: If there is a safe prospective income in view, the arbitrator ought to take that into account to increase the price to be paid?—Yes.

23,715. And if he does that, if he makes that calculation accurately and fairly, a purchaser will pay no more than the prospective income is really worth?—No.

23,716. The only disadvantage he will have is that he will have to pay that down in cash on the instant, and to wait some years till his prospective income comes into play?—Yes.

23,717. So that for some years he has to suffer what you may call a loss. That is, he has to find money out of pocket, in order to pay the interest upon the present

value of the prospective income, but ultimately that comes in and is repaid?—Yes.

23,718. Is that right?—Yes, I think so.

23,719. Therefore it is only a temporary question for the consumer?—Yes.

23,720. The consumer ultimately, if the arbitrator has fixed upon the right figure, comes into exactly the amount of prospective income that he is called upon to pay for?—Yes.

23,721. (*Mr. Pember.*) There ought to be no profit and no loss?—No.

23,722. (*Chairman.*) There ought to be no profit and no loss if the arbitrator—?—If the arbitrator is a fair-minded man.

23,723. (*Chairman.*) If the arbitrator is a fair-minded, and a perfectly correct and accurate man, there ought to be no profit and no loss at all upon the valuation of present income or upon the valuation of the prospective income, but the purchaser if it is a public authority will have to find a sinking fund?—Yes.

23,724. If the purchaser is a philanthropic purchaser he will have to cut down the London rates to some lower figure. Can you point out to me any other considerations that are of importance in judging of the financial expediency of purchase?—Of purchase generally?

23,725. Yes, that is what we want light upon. Of course, I do not want to press you to say anything that you think would injure your Company?—What would you like light upon?

23,726. For instance have you got any opinion upon this contested point of compensation for compulsory sale. Do you conceive yourself entitled to that?—Yes, I should, certainly.

23,727. Why, is there any sentiment attaching to a water share of the East London Company?—If we sold it, as I understand it—and I should be very glad if you would correct me—if we were purchased under the Land Clauses Act, it would be in the power of the arbitrator to take that 10 per cent. into consideration, would it not?

23,728. Yes. He might award something for compulsory sale if he thought fit?—Yes, or not.

23,729. Or not?—Then I should be content to leave it in that way. I am bound to say, I think Mr. Banbury's scheme is the best I have seen—a rough and ready way of dealing with the business.

23,730. (*Chairman.*) Still, on this question of compensation for compulsory sale, you admit that there is no sentimental value in question, as there would be in an estate or a house or an ancestral possession?—Yes.

23,731. Then what is the compensation for compulsory sale to represent in your judgment?—We are unwilling to sell. It is for the unwillingness.

23,732. But you get your full worth?—It is the unwillingness.

23,733. You get the full worth of your holding and what more do you claim as compensation for compulsory sale?—I should leave that to the arbitrator to say.

23,734. But I want you to give me some light upon why the arbitrator should be allowed to give you something more?—Is it not generally done under these circumstances.

23,735. Whether it is generally done or not, I want to know why you justify it in your case?—I do not know any particular point that I could urge in that way.

23,736. I will try to help you. Of course, your shareholder will have to re-invest his money?—Yes.

23,737. What do you call the East London stock at this moment? Do you call it a 3½ per cent. security, or

a 4 per cent. security, or a 5 per cent. security—what do you call it?—What is it, do you know present prices?

(*Mr. Pember.*) About 3.

(*Mr. Balfour Browne.*) It is more than that.

23,738. (*Mr. Pope.*) 3½?—I have not looked into it.

23,739. (*Chairman.*) Then you, the chairman, do not know?—No. I am very bad at the financial part of the matter.

23,740. If it is a 3 per cent. security, I suppose he would have no difficulty in finding another 3 per cent security equally good in the market from day to day?

(*Mr. Pember.*) Many *cestui que* trusts are allowed to continue their trusts in the present state of investment, but if once they are sold they have to go to trustees' stocks?

23,741. (*Chairman.*) Would you agree with me so far that there would be no pretence for giving compensation for compulsory sale unless the shareholder paid off has some difficulty in finding a 3 or a 3½ per cent. security equally good?—Of course that would be a material point if he was able to get it, but I do not know that he would.

23,742. If he is not able, of course then I quite agree with you that compensation for compulsory sale becomes extremely important. But supposing he is able to get it without difficulty, and at once, is there any other ground upon which you can put the compensation for compulsory sale?—No, I do not know that there is.

23,743. It is admitted, I suppose, that there is no sentimental ground?—Yes. It is not as if it were a house.

23,744. Or an estate, or an ancestral jewel?—No.

23,745. Then it comes to that, that the compensation for compulsory sale, in your judgment, should be in respect to the cost and delay of finding an equally good investment?—Yes, provided that he took the prospective value exactly. That was understood.

23,746. Yes. Present value, prospective value?—Yes.

23,747. (*Sir John Dorington.*) You have said that there is a feeling against your Company in your district. Is that pretty general, or not, do you think?—No. Of course I think, naturally, the poor people have been put to great inconvenience, and were in a great rage, and they were stirred up—that is very natural, too—by various people who went about and said: "Look here, you spite the Water Company by using as much water as you can," which was really doing themselves, the poor people, an injury. There is no doubt the waste was cruel at times when we were wanting water.

23,748. (*Chairman.*) Do you mean to suggest that the waste of last summer and last autumn was wilfully caused in order to increase the difficulties of the Company?—It aggravated it; I think so certainly. I think the engineer would tell you that. I think if he were here he would say that.

(*Mr. Pember.*) He is here.

(*Witness.*) I think, as our late chairman reminds me, there was a man wrote publicly to the newspapers to say that that was the case.

23,749. (*Chairman.*) I am afraid we have not studied all that has appeared in the newspapers. All that was proved before us was that the waste was considerable, and was so great that it actually caused an inconvenience to those who had charge of the sewers, inasmuch as it filled the sewers to repletion; but it did not at all appear that this was done wilfully and maliciously.—I believe it was, in many cases.

23,750. I do not know that I have anything more to ask you that bears upon our inquiry.

(*Mr. Balfour Browne.*) I should like to ask a few questions.

The Witness withdrew.

[Adjourned till to-morrow, at 12 o'clock.]

Lieut.-Col.
A. R. M.
Lockwood,
M.P.

30 Jan. '99

Recalled,
Q. 23,751.

FORTY-EIGHTH DAY.

Tuesday, January 31st 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
SIR JOHN EDWARD DORINGTON, Bart., M.P.
SIR GEORGE BARCLAY BRUCE, Kt., C.E.

ALFRED DE BOCK PORTER, Esq., C.B.
Major-General ALEXANDER DE COURCY SCOTT, R.E.
ROBERT LEWIS, Esq.
CECIL OWEN Esq., Secretary.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Lieut.-Col.
A. R. M.
Lockwood,
M.P.

31 Jan. '99

Lieut.-Colonel AMELIUS RICHARD MARK LOCKWOOD, M.P., recalled.

Cross-examined by Mr. BALFOUR BROWNE.

23,751. I have a very few questions to ask you; I will not go into your historical researches?—Thank you.

23,752. But I want to ask you a few questions. You told the Commission that the management of the East London costs altogether 24,650*l.*?—Yes.

23,753. And for that money I have no doubt you get the assistance of exceedingly able engineers and persons who have acquaintance with the management of waterworks?—We have no engineer, *quâ* engineer, on the Board.

23,754. I did not mean on the Board; I did not understand that the 24,000*l.* was all spent on the Board?—That is so; of course, we have Mr. Bryan and others.

23,755. Mr. Bryan and Mr. Crookenden?—Yes.

23,756. And they are very able officers, I have no doubt. I suppose I am not doing the directors any injustice when I say they leave all engineering details to Mr. Bryan?—Mr. Bryan, of course, brings up all his engineering questions before the Board every week and explains them thoroughly to the Board, who naturally are guided by his opinion.

23,757. And you as chairman, I suppose, had no special knowledge of waterworks until you joined the Board, had you?—No.

23,758. And you would be, like any other person in your position, largely guided by the expert knowledge and expert experience of such a gentleman as Mr. Bryan?—I should be.

23,759. With regard to the last famine, I do not want to say one word against the company, because I see that you spoke, if I may say so, in a very proper way about the regret of the Board that it should have happened. The only question I would like to ask you is: Are you not aware that it might have been foreseen from past experience?—I will be perfectly honest with you—naturally you would probably get it out of me if I were not—I will be perfectly frank with you, and I will tell you that at one time I did puzzle my head very much as to whether it might not have been

foreseen, but I have questioned Mr. Crookenden and Mr. Bryan, and I have taken a good deal of personal trouble, and I am honestly of opinion that it could not have been foreseen.

23,760. You know, I daresay, that so long ago as 1864 your then engineer said that you were at the end of your resources?—No, I was not aware of that.

23,761. You know, of course, that you had a very severe test in the year 1893, and there was a failure of supply then?—Yes.

23,762. You have taken steps to mitigate the evil by buying water from other companies?—Yes.

23,763. And that is so much the worse for you, I suppose; I mean to say you have to pay for the water and the other company gets the profit?—

(Mr. Pember.) I do not know what witness you allude to; nor what he did say in 1853.

(Mr. Balfour Browne.) Not 1853, 1864.

(Mr. Pember.) Well, 1864; I do not know who he was, first.

(Mr. Pope.) If we are to take that witness as a guide as to what could be foreseen, we want to know exactly who the witness was.

23,764. (Mr. Balfour Browne.) I will give the references and read what that gentleman said. (*To the witness.*) I daresay you know sufficient of the history of the company to know that Mr. Charles Greaves was your engineer, or the company's engineer, do you not?—I believe he was.

23,765. In giving evidence on the East London Water Bill in 1867, he was asked this—

(Mr. Pember.) You have passed from 1864.

(Mr. Balfour Browne.) I am coming to it—he is speaking of 1864: “I believe that in the year 1864 you found that the supply of water in the Lea was just sufficient or barely sufficient for your requirements?”—(A.) We did so. The year 1864 was such a year as had not been known before. It was the greatest drought within the memory of anyone.” Then in

Question 630: "But in 1865 I believe that there was a sufficient supply of water in the Lea for your purposes?"—(A.) With the assistance of such storage as we then had there was sufficient." Then. (Q.) In view of what had taken place in 1864, did your directors determine last autumn upon the introduction of two Bills for increasing your supply?—(A.) They did. They resolved upon making an application to Parliament for powers to take a supply of water from the Thames in addition to the powers for increasing their storage room in the valley of the Lea. (Q.) You proposed to increase the storage so as to give you 210 acres of storage at Walthamstow, did you not?—(A.) Yes. (Q.) And that would give you the means of storing altogether 500 million gallons?—(A.) That would give us the means of storing altogether 500 million gallons. (Q.) That enables you to supply 10 million gallons a day for a period of 50 days?—(A.) It does." So that even then, apparently in 1864, there was a severe drought which tested the resources of the company. Then I find that the same gentleman was examined before the Royal Commission on Water Supply, and he was asked this—it was on the 6th June 1867 that the evidence was given: "You have, of course, had your attention directed a great deal to the River Lea, and although you have gone this Session to Parliament to obtain a large quantity from the Thames above Teddington, yet do you consider the resources of the Lea to be now exhausted by your two companies, the New River and the East London, taking water from it—I mean independent of the question of the cost of getting it, but taking it as a purely physical question?" Then he says: "I am of opinion that as the larger portion of London is dependent upon the Lea, it ought not to continue any longer dependent upon the Lea alone for its supply of water as to quantity. The caution that we have had from the drought of 1864 was convincing; there is no room to doubt the question any longer." The next question I will read is: "I gather that your view would be that you would prefer going to the Thames proper for any additional supply, leaving the Lea to be applied to in case of necessity some 100 years hence?"—(A.) I am going to make a 100 acre reservoir now upon the Lea in addition to what I have got. I shall combine my Thames works and my Lea works together, and if I cannot fill my Lea works with the Lea water, I shall fill them with the Thames water. I should not rely on the Lea alone, or on the Thames alone, but I should allow my reservoir in the Lea to be filled from the Thames when necessary. I consider the Lea alone not to be depended on even for the East London and less so supposing the New River Company do an equal amount of work."

(Chairman.) On what occasion was that evidence given?

(Mr. Balfour Browne.) The last portions that I have been reading were given before the Duke of Richmond's Commission of 1869, questions 5177 and 5179.

(Mr. Pember.) Thirty years ago—1867 I am told it was.

(Mr. Balfour Browne.) 1869 I am told it was.

(Mr. Pope.) You said the evidence was given in 1867.

23,766. (Mr. Balfour Browne.) I beg your pardon, the evidence was given on the 6th June 1867; the report was 1869—that was what I was thinking of. (To the witness.) There is only one other passage that I think I need read to you, Colonel Lockwood—(Q. 5131): "What proportion is that of the stream which passes by you?" After stating that you were delivering something under 20 million gallons a day, Mr. Greaves answered: "That will vary entirely with the season. During the year 1864 we took the whole of the volume. There was nothing went by, and we have had to plead poverty before the Committee of the House of Commons while arguing the necessity for going to the Thames to help ourselves with a supply from that river." You have told me that you have purchased water from other companies, and that is so much the worse for your Company, and so much the better for them?—Yes, I do not think it is a remunerative outlay.

23,767. It cannot be, I suppose?—That is so.

23,768. And you are taking steps, I understand, to obviate such a famine in future?—We are.

23,769. Of course, those steps involve a large expenditure of money?—Yes.

23,770. And suppose you expend merely sufficient money to enable you to do your duty in the future, that will not be remunerative expenditure?—I think I am not mistaken in saying that we have always found increased expenditure is remunerative.

23,771. Of course, the district is increasing and you find that your rates are increased in consequence?—Yes.

23,772. But up to the present time you are bound, we will say, to supply half a million of people, and you do not do it efficiently?—Well, that is a matter of opinion.

23,773. I am assuming it for the sake of the question. Supposing you put down works merely to supply that half million of people, you will not get any more remuneration than you do at the present time?—No, but the works that we contemplate are for an increased population.

23,774. So far as it is an increase there will be remuneration?—Yes.

23,775. But so far as it will enable you to do your duty, there will be no increase of remuneration?—The two are coupled together.

23,776. I know that, but they can be separated for the sake of a question and answer. As I understand—I do not think his Lordship asked you the question—like the Chairman of the New River Company, you do not think there is any necessity for any control of the water companies?—There are two forms of control which I should be perfectly willing to make obligatory on the Company—the admission of the Water Examiner, say, and, I think, the analyst. I think the more publicity the better.

23,777. As we understand, that really is only a change in form?—Well, it is.

23,778. Because, up to the present time, the Water Examiner has never been refused access?—No, never.

23,779. That is the only control which you can suggest?—Yes, and the analyst.

23,780. The analyst of course, has access to, not the sources of supply, but to all the taps in East London?—Yes.

23,781. So that he can test the water that is supplied?—Yes.

23,782. Which is the important matter to-day?—Yes.

23,783. You would not like, would you, to be under the power of a Government Department, which might say to you, whether it is remunerative or not, you shall go and build a big reservoir in Wales?—Now you ask me whether I would like it?

23,784. Yes?—I should not like it; but if I must be put under somebody, I confess that I should prefer a Government man, because there are two classes of men who, I believe, seldom or ever go wrong—the judges of the land, and the public servants in the public offices.

23,785. I am very glad to hear you say so; but I am sorry I cannot go the whole length?—Honestly, I have implicit faith in them, and if I was to be put under anybody, I should prefer being under Government.

23,786. The Government has the fault that you complain of in the County Council, that it is rather a political body, is it not?—Sometimes.

(Mr. Pember.) Not the Government officials.

(Witness.) Not the Government officials.

23,787. (Mr. Balfour Browne.) Not the permanent officials, but the Government itself is a political body?—They are bound to be public servants.

23,788. Suppose the President of the Local Government Board, we will say, said, "The East London Company has failed in its duty, it ought to go to Wales and spend millions of money whether it is remunerative or not," would not it be a very hard thing on the shareholders?—I cannot imagine a Conservative Local Government Board saying such a thing.

23,789. But perhaps the Conservatives may not always be at the Local Government Board?—No.

23,790. Now, tell me another thing; you do not really, I understand, object to sell on fair terms?—I should be an unwilling seller under any circumstances,

Lieut.-Col. A. R. M. Lockwood, M.P. 23,791. I understand that; you have told my Lord that if you are to sell you want to sell under the Lands Clauses Act?—That is so.

23,792. And if I may say so, you rightly said the main principle of that is that it is the value to the owner that is taken?—I think you laid it down so.

23,793. I do not know that I laid it down. I mean to say you laid it down yesterday?—I never laid down anything, but that is the effect of what I said—the value to the owner.

23,794. And the value to the owner must be looked at in each individual case, I suppose?—Yes.

23,795. Having regard to its powers, its present revenue, and its future?—Yes.

23,796. The other matters I gathered were rather machinery than anything else; you did say the Lands Clauses Act, because it was recognised and well considered, because all the points of law have been settled, and because it was always adopted?—That is so.

23,797. The main principle upon which you went was that it was to be the value to the owner?—Yes.

23,798. Supposing you think the value one thing, and the purchaser thinks it another, how is that to be settled—by a fair-minded arbitrator?—I presume the arbitrator acting under the Lands Clauses Act is bound, is he not, I am not good at these legal points, but I fancy he is bound, is he not, under certain decisions.

23,799. The main decision is the one that you have referred to *Stebbing versus The Metropolitan Board*, that it is to be the value to the owner that is the guide; that is the main decision. Now, I suppose a fair-minded man between the two parties could easily with a little trouble find out the value of the East London undertaking to the owner—the company—could he not?—Yes.

23,800. And that is the way that it would be settled?—Yes, I presume so.

23,801. If you got a perfectly fair-minded arbitrator to determine, I will say, the full and fair value to the owner, then you would have money instead of shares?—There would be money instead of shares.

23,802. And that would be equivalent to the shares?—I presume it would.

23,803. If you get it rightly done?—Yes.

23,804. Under these circumstances, bearing in mind what you said to my Lord that you wanted something for re-investment, you do not want anything else, do you?—Nothing more than what?

23,805. Than the fair?—Nothing more than the fair value to the owner.

23,806. The fair and full value, I will give you, to the owner, and something to re-invest the money?—You mean that I ought not to think about this 10 per cent. business?

23,807. I think you gave up the 10 per cent. to Lord Llandaff yesterday?—I do not think I would ever give up the 10 per cent.

(*Mr. Pember.*) I do not know, my Lord, whether this is quite fair, but I will take your opinion about it. Of course, you will do what you think right. What my learned friend is trying to do is to found evidence from Colonel Lockwood for some precious special arbitration clause of his own or other, so that he may use this evidence against us whenever we come to Parliament, if we do—and in the arbitration too. Now, I do not think that is fair.

(*Chairman.*) Colonel Lockwood is quite able to protect himself and his company.

(*Witness.*) No, I am not, indeed.

(*Mr. Pember.*) That is all very fine.

(*Mr. Balfour Browne.*) You will not forget that I did not begin this. It was Colonel Lockwood yesterday who mentioned this matter. I do not see how your Lordship is to discuss the financial aspects of purchase unless you know what the company is claiming. Now, I understand that Colonel Lockwood distinctly said yesterday—and I will read what he said—that if he got the full and fair value, there was nothing else he could suggest, except the cost of re-investment.

(*Witness.*) Pardon me.

(*Chairman.*) Not quite the cost of re-investment.

(*Mr. Balfour Browne.*) Cost and the time of delay.

(*Chairman.*) Yes.

(*Mr. Balfour Browne.*) Those were the two elements.

(*Mr. Pember.*) And loss.

(*Chairman.*) And getting an equally good security.

(*Mr. Balfour Browne.*) Yes, getting an equally good security.

(*Witness.*) If 40 millions were thrown on the market, it would raise the securities a certain amount, and we should have some difficulty in being able to re-invest this money.

(*Mr. Balfour Browne.*) I quite understand that.

(*Mr. Pember.*) I maintain that Colonel Lockwood ought not to be asked to go any further.

(*Mr. Balfour Browne.*) He cannot be asked to go any further than he went yesterday.

(*Mr. Pember.*) Very well, then I will sit down.

23,808. (*Mr. Balfour Browne.*) Colonel Lockwood, first let me read to you what you said yesterday at Question 23,742:—"If he is not able, of course, then I quite agree with you that compensation for compulsory sale becomes extremely important. But supposing he is able to get it without difficulty and at once, is there any other ground upon which you can put the compensation for compulsory sale?" (A.) No, I do not know that there is." Now, that was after my Lord had put re-investment to you?—Yes. His Lordship asked me this. He said, "You have no sentimental reason such as an old estate or a house"—

23,809. Or a jewel?—Yes, or that sort of thing, and I said, "No, I had not." I think, my Lord, that is the answer I gave you.

(*Chairman.*) Yes, it is; that follows.

23,810. (*Mr. Balfour Browne.*) Absolutely. The only thing you did suggest was that, first, you should have the fair and full value and not only the cost—his Lordship is quite right—but the delay for re-investment?—The cost and delay of re-investment.

(*Mr. Balfour Browne.*) Is that not so?

(*Chairman.*) That carries with it, you know, that if he cannot find an equally good security—equally remunerative—he should have something to make up the difference; if he can only find an equally good security at a lower rate of interest, he must have enough to make up the difference.

(*Mr. Balfour Browne.*) That, of course, would be discussed before the arbitrator in the first instance.

(*Chairman.*) Yes.

(*Mr. Balfour Browne.*) But beyond that, beyond the lump sum—

(*Chairman.*) I mean the cost of re-investment is not merely the broker's charges.

(*Mr. Balfour Browne.*) Not necessarily.

(*Chairman.*) It is what it will cost him to get a fresh investment producing an equally secure and large income.

(*Mr. Balfour Browne.*) The same income with the same security.

(*Chairman.*) Yes.

23,811. (*Mr. Balfour Browne to witness.*) You cannot suggest anything else that could justify the 10 per cent except that?—I am not prepared to do so.

23,812. Now you said that so far as you had considered it, the scheme of purchase suggested by Mr. Banbury, although rough and ready, seemed the best purchase that could be devised?—The best that I had seen.

23,813. And you said also to my Lord that you thought that your shareholders would accept such a scheme?—That is my personal opinion, but they might change their minds.

23,814. Of course you have not consulted them?—No, I have not asked one of them except the late chairman.

23,815. Now let me see if I understand what that was: It was to give the shareholders in the company—I will deal with yourself alone in the meantime—the water stock secured upon their water undertaking?—Yes, on the water rates.

23,816. And that water stock was to give you precisely the same income, being, of course, upon the same security as you had before?—Yes.

23,817. That was the scheme?—Yes.

(Chairman.) With the addition that it was to be a trustee stock.

23,818. (Mr. Balfour Browne.) That, of course, would give them a bonus?—Yes.

23,819. By increasing the value?—Yes.

23,820. Follow: In that case if the arbitrator thought it fair and reasonable, and you seemed to think it fair and reasonable, there would be no re-investment?—Mr. Banbury in his evidence said he had not contemplated an arbitrator, but he did not see any great objection to one—if I remember right.

23,821. I quite agree. What I mean to say is: suppose the arbitrator said it is a fair thing to do to hand over to these people water stock instead of shares, or their own stock, then, of course, there would be no re-investment?—Then there would be no re-investment, but there would be—

23,822. And you would have, whatever the purchaser's stock was called, water stock instead of the shares?—Water stock instead of the shares under the Board that he contemplated.

23,823. And you would have an equal income with the same security?—He was to have an equal income with the same security.

23,824. It would be a better security, as I understand you, to the extent that it would be a trustee stock?—It would be a trustee stock.

23,825. You do not want the rates of London to be given as a security besides the water rents?—No; I think in his evidence he says water rates; he named them with power to raise fresh stock.

23,826. (Mr. Pember.) Then he also said—I do not know that it is really much worth discussing—that there must be a power in some body to raise the water rates in case the security became insufficient?—Yes, in case it did not cover the amount.

23,827. (Mr. Balfour Browne.) In one company I can understand that that would work conveniently, but suppose the water rates of all London were made the security, might not that enhance the value of the stock of some of the companies—the Southwark and Vauxhall, for instance, and the East London?—It might, but he described that. He said that it was a rough and ready scheme.

23,828. Quite so. Now, as I understand, you told my Lord yesterday that if the arbitrator did rightly give the present and discounted prospective value, then, looked at from a financial point of view, there would be no profit and no loss to the purchaser—do you follow?—I do not remember it.

23,829. Yes, you did say so?—I have no doubt you are right, but I was just thinking.

(Chairman.) I think there was a qualification to that.

(Mr. Balfour Browne.) I think not, my Lord. You will find it at Question 23,720: "The consumer ultimately, if the arbitrator has fixed upon the right figure, comes into exactly the amount of prospective income that he is called upon to pay for?—(A.) Yes. (Mr. Pember.) There ought to be no profit and no loss?—(A.) No. (The Chairman.) There ought to be no profit and no loss if the arbitrator—?—(A.) If the arbitrator is a fair-minded man. (The Chairman.) If the arbitrator is a fair-minded and perfectly correct and accurate man, there ought to be no profit and no loss at all upon the valuation of present income, or upon the valuation of the prospective but—"

(Chairman.) "But."

23,830. (Mr. Balfour Browne.) I am coming to that—that has nothing to do with the arbitrator—"but the purchaser, if it is a public authority, will have to find a sinking fund."?—Did I say that?

(Chairman.) Those are my words, and to that you answered "Yes."

(Mr. Balfour Browne.) The sinking fund has nothing whatever to do with the transaction between the County Council, if that is the purchaser, and the company—nothing.

(Mr. Pember.) Obviously.

23,831. (Mr. Balfour Browne.) It is a purchase and paying off of the debt of the County Council, is that not so?—The sinking fund is.

23,832. Suppose it is a sinking fund that is paid off in 60 years, then at the end of 60 years the County Council would be the owner of all the waterworks in London without paying interest or sinking fund at all.

(Mr. Pope.) At the expense of the ratepayers at present.

(Mr. Balfour Browne.) Quite so, that is the scheme.

(Mr. Pope.) The question is whether that is financially beneficial.

23,833. (Mr. Balfour Browne.) Do you know, Colonel Lockwood, that the same thing takes place with regard to sewers, street improvements, and everything that is carried out by a corporation?—They take it, do you mean, to terminate at 60 years?

23,834. No, not at 60 years, but at different periods; for instance, for sewage works they would only get 30 years at the outside?—Yes.

(Mr. Balfour Browne.) That has nothing to do with you, however.

(Mr. Pope.) No, nothing.

(Mr. Balfour Browne.) Nor the company.

(Witness.) No.

23,835. (Mr. Balfour Browne.) You would be gone, and this would be between the ratepayers in London and their representatives?—Yes.

23,836. If London doubles in the next 50 years and your district is increasing, you say some new works will have to be carried out?—If it did so.

23,837. Yes, if it doubled?—Doubled in 50 years?

23,838. I am only putting a supposititious case. Suppose it goes on increasing largely, then some new works would have to be carried out?—Yes.

23,839. If the companies carry them out, do you think it is fair that the companies should ask for the profits upon the money expended upon those new works?—Certainly I do.

23,840. If, on the other hand, the County Council carries out those new works, the public would get the profits?—They would have found the money.

23,841. They would have found the money and they ought to get the profits?—And they would, I suppose, if they were public works.

(Mr. Balfour Browne.) Quite so.

23,842. (Major-General Scott.) They would have to take the risks?—Yes.

(Mr. Balfour Browne.) But we are not afraid of the risks in London.

(Mr. Pope.) The County Council does not count any risks.

23,843. (Mr. Balfour Browne.) You told my Lord this—that you had large prospective values?—Yes, I think so.

23,844. Is that because of the increase in your district?—It is because of the increase.

23,845. Then you think that the district is not going to stop and stand still?—No, I am sure it is not.

23,846. I will not go into Jack Cade?—Thank you.

Re-examined by Mr. PEMBER.

23,847. There are one or two facts that I daresay your Lordship will allow me to get from Colonel Lockwood. As we all know, I am afraid too well, the Royal Commission put down the Lea at 52½ millions—that is, 30 to you, and 22½ to the New River?—Yes.

23,848. I believe from wells—such wells as you have now—you hope to get from 11 to 14 millions more?—That is so, and the prospect of getting water from the wells seems to increase every day.

23,849. Then, besides that, there is 10 millions from the Thames?—Yes.

23,850. So that the water which you can get with proper machinery for the purpose is about 54 millions?—Yes.

23,851. Am I right in suggesting that your present supply is 42 millions?—I think it is right; 41 it averaged last year, but I think it is 42.

Lieut.-Col.
A. R. M.
Lockwood,
M.P.

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Lieut.-Col. A. R. M. Lockwood, M.P. 23,852. I think it is about 42, so that there is an apparent surplus for you to cut and come again at, of 12 millions?—Yes.

31 Jan. '99 23,853. As we know, you are going for a storage of 5,000 million gallons this year. I believe I am right in saying that the capital asked for in that Bill is a million of money?—Yes.

23,854. Let us see what those old matters were that Mr. Balfour Browne asked you about. Do you know enough—because if you do not, I will not try and put it myself to you—do you know enough about the history of your Company to know that you had little or no storage before the year 1864?—I believe that is so; I understood so.

23,855. So that any straits you were in in the year 1864 were manifestly from want of storage?—Yes.

23,856. I daresay you know enough about the history of water undertakings to know that during the last generation engineers have learnt a great deal in the matter of necessities for storage?—Enormously.

23,857. However, you went for 500 million gallons in the next year?—Yes.

23,858. And, apparently, a year or two later, from what my learned friend asked, over 100 acres more, which, inasmuch as the 500 million gallons represented 200 acres, we may put it 250 millions more?—Yes.

23,859. In fact, I think I can recollect that, until two or three years ago, you were used to say that your storage was about 750 millions?—Yes.

23,860. So that, according to your lights, in 1865 and 1866 and 1867, you did your best to provide against the recurrence of such a strait as 1864?—I think we did.

23,861. So far as later years are concerned, I daresay you will bear me out in this, that everybody, including Sir Alexander Binnie, to whom I quoted his own evidence in 1892, said that your storage then was sufficient?—Yes.

23,862. Since then you have had the experience of 1893, and you have had the experience of 1898?—Yes.

23,863. And now, once more, you are setting to work to put your house in order in that way?—That is so. It seems to me that water engineers can only go upon given data. They take the minimum, and then Nature upsets the whole calculation.

23,864. From epoch to epoch, then, when you have done this 500 million gallons, you will have got machinery for dealing with 54 million gallons a day?—Yes.

23,865. You are looking fairly well ahead then. When you said you did not like to be put under a Government Department, I think I may just ask you to strengthen your dislike; you would not like it to be in the power of any one man to say, you shall go and spend two or three millions or four or five millions in Wales or anywhere else?—No, I should not.

23,866. You would like an appeal to Parliament?—Yes; I should like to have that power.

23,867. But if it were the opinion, say, of some Government official, that the time had come for your spending two millions or three millions of money in some particular way that you and he differed upon, I suppose it would be possible for him to bring in a Bill and for you to oppose it?—Yes, it would.

23,868. And then Parliament would hold the scales between you?—Yes.

23,869. As far as I know there is no legal machinery to prevent any Government Department doing that to-day?—I do not think there is.

23,870. I do not know I am sure, in fact I think we did once have a Government Water Bill brought in in 1852—

(*Chairman.*) You had a Bill obliging you to go up to—

(*Witness.*) The Railway Commissioners.

(*Chairman.*) To Hampton or wherever it was.

(*Witness.*) Then we had Mr. Chaplin's Bill.

23,871. (*Mr. Pember.*) There is no Constitutional reason why it should not be done at this very moment, and you do not want legislation therefore for that. Now my learned friend says, can you suggest anything else than what you have suggested to justify the 10 per cent? I suppose you would hardly do me the injustice, would you, to say that it was not possible for me to suggest something more?—I am sure you could suggest a great deal.

23,872. Very well, in fact you will not go further than this, I suppose, that you yourself have not had much experience in arbitrations?—None at all.

23,873. And you do not know what the reasons may be for giving 10, 20, or 30 per cent?—No, I do not, I am only a baby in these matters.

23,874. Above the values stated in the first instance, in fact you have formulated no claim on the subject at all?—No.

23,875. Either for present or for prospective, or for any subsequent addition?—No.

23,876. Now with regard to this water stock supposed to be created by the County Council under some such scheme as Mr. Banbury's, it would be no catch whatever for a security if the London County Council were to immediately go and reduce the rates from all the various levels, down to the West Middlesex level, would it?—No, I do not think it would.

23,877. And, therefore, if such a water stock were to be accepted, may we take it that it would absolutely stop that lowering of rates of which Sir Alexander Binnie and one or two other witnesses of the County Council have spoken?—I fancy it would.

23,878. It would certainly stop that?—Yes.

23,879. (*Chairman.*) May I ask whether you had any reason for not joining in the Staines Reservoirs Scheme?—I cannot charge my memory. I have only had the chairmanship for two months, and I do not remember, I could not give you an answer.

23,880. (*Sir John Dorington.*) Were you on the Board then?—I have been on the Board three years and a half. I am quite the chicken of the party.

23,881. Why do you say your prospect of water from wells seems to increase every day?—I was talking to the engineer the other day and he said the amount of water we found in our wells was very great; they kept striking fresh fissures, and our pumps were almost overcome. I think that is correct.

23,882. Does that mean that since the 1st of January the produce of the wells is increasing?—Every day—every week we are striking fresh fissures in the chalk.

23,883. Is that in consequence of the season being now a wet season?—No, I do not think it has anything to do with that.

23,884. But with the wells you are sinking?—In the wells where we are driving adits, driving headings, the water keeps coming in in quantities.

23,885. (*Chairman.*) Are those wells in Hertfordshire, or in what county?—They are in Essex.

23,886. (*Mr. Pember.*) I do not think you have any wells in Hertfordshire?—No, we have none.

23,887. (*Chairman.*) It is only the New River?—Yes; we are on the other side.

The witness withdrew.

Mr. W. B. Bryan.

Mr. WILLIAM BOOTH BRYAN recalled, and further examined.

23,888. (*Chairman.*) You are the Engineer of the East London Waterworks Company, and you have already given evidence before us. We, therefore, know your qualifications. I will not trouble you to recite them again. Have you prepared a return as to the works and supply of your company?—Yes.

23,889. Up to the present date?—Up to date.

23,890. Will you put that in?—Yes.

The witness handed in Return. See Appendix Q, 1.)

23,891. Have you also prepared a table showing the distribution of your capital and expenditure up to 1870, and totals from 1871 to 1879, and annually from 1880 to 1897?—Yes, that is so.

(The witness handed in Table. See Appendix Q, 2.)

23,892. I think we have got now the rights of taking water from the Lea quite clearly, and I do not think I need ask you any questions upon that. Is the statement that we have had, as to the rights of taking water from the River Lea, correct?—Quite correct.

23,893. Do you mean the one we had yesterday from Sir Alexander Binnie?—No, the New River statement. I do not know what Sir Alexander Binnie's statement was, but the New River statement is quite correct. It is on the notes in the evidence given by the New River Company.

(Mr. Pember.) The truth is, the Statute of 1855 is as simple as possible.

(Chairman.) Only I see here a different amount of water for the upper reach, the middle reach, and the lower reach.

(Mr. Pember.) Yes, that is all in the Act, my Lord.

(Chairman.) Is it?

(Mr. Pember.) Yes. The only thing is, that what has confused a great number of minds with regard to the Act, is that it so happens that they have got what is now rather an antiquated way of stating the amount of water in cubic feet, instead of in gallons; and we, in the paper which you have before you, have turned the cubic feet into gallons; that is all included in section 7 of the Act.

23,894. (Chairman to Witness.) It comes to this, that the Lea Trust has the right to pass through their locks a certain quantity for the upper reach, the middle reach, and the lower reach, and the ultimate quantity in the lower reach amounts to 5,400,000 gallons a day?—Yes.

23,895. (Mr. Pember.) Including the other two?—Including the other two.

23,896. (Chairman.) And they have also the right to draw any further quantity necessary in each pond to maintain the water at the customary level?—Yes.

23,897. Then the New River Company have the right to take 22½ million gallons a day?—Yes.

23,898. The East London Company have the same right to 22½ million gallons a day?—Yes.

23,899. Then each company take, *pari passu*, 4½ million gallons a day?—Yes.

23,900. Or any additional quantity that there may be?—That is so.

23,901. Then I see that the Lea Trust have a right to the whole of the water below Tottenham Mill?—They have.

23,902. For the want of any map, I cannot follow that—where is Tottenham Mill?

(Mr. Pember.) It is a long way below the intakes.

(Witness.) Tottenham Mill is about four miles below the company's intakes.

23,903. (Chairman.) If I understand the way in which these provisions are worked, nothing gets down there except this 5,400,000 gallons?—Yes, there is an intercepting drain made by the East London Company under the powers of their 1853 Act, which brings a considerable amount of water into the navigation below Tottenham Lock.

23,904. (Sir John Dorington.) Is Tottenham Lock the same thing as Tottenham Mill?—It is adjoining Tottenham Mill.

23,905. (Chairman.) Does the Act give the companies power to supply the trustees with the quantities reserved to them by pumping water?—It does.

23,906. From one pond of the navigation to another?—Yes.

23,907. Provided always they did not reduce the level of the ponds below the customary heads?—That is so.

23,908. It has been suggested to us by Sir Alexander Binnie, I think, that the East London Company had interfered or put pressure upon the Conservancy not to take their *minimum*?—Yes.

23,909. What do you say as to that?—That is not so; the fact was contradicted at the time, and the Chairman of the Lea Conservancy himself, later on, before a Parliamentary Committee, stated that there was no foundation for this allegation.

23,910. (Mr. Pember.) You might give his name, perhaps?—Mr. Edward Rider Cook. He is dead now.

23,911. (Chairman.) I suppose the Lea Conservancy are quite independent of your company?—Quite.

23,912. Have you a representative on the Conservancy?—We have two.

23,913. (Mr. Pember.) The total number being?—Mr. W. B. Bryan. The total number being 13.

23,914. (Chairman.) How many has the New River Company?—Two. 81 Jan. '99

23,915. (Mr. Pember.) Four out of 13 then?—Yes.

23,916. (Chairman.) We have heard something about pumping polluted water from the lower reaches to the upper reaches. Will you say what you have to say about that?—We have a pumping station at Bromley Lock.

23,917. Where is Bromley Lock? I wish we had a chart?—There is a little map here which I can put before you. (Handing in map and explaining to the Commission.) This is the official map of the Lea Conservancy. The Thames is *there*; the Limehouse Cut is *that* portion, and it runs into the Thames close to the Regent's Canal entrance. The old River Lea comes through all those channels and joins the River Thames at Blackwall a mile or two lower down. At this point, Bromley Lock, the tide comes along this river, and at high tide the water enters the navigation *here*. It also enters *here*. The tide flows up as far as Old Ford Lock, which is *here*. At that point the upper pond is about 8 feet higher than the lower, and the tide can get no higher up the navigation.

23,918. The tide cannot get higher than Old Ford Lock?—Not that way, but the tide can come round back rivers higher up to as far as that pencil mark—about a mile higher. The Lea navigation being canalised, the tide gets no higher than Old Ford.

23,919. Do all the barges use what you call the Lea Navigation?—They do.

23,920. That is by the artificial canal and the Limehouse Cut into the Thames?—And certain back rivers at Stratford. Vessels come up the old river on the tide, and there are certain gates which open with the tide at Bromley Lock. Then the barges can come in on the tide into the navigation. As soon as the tide begins to ebb, the gates are closed. And then the traffic into the Thames again depletes or lowers the head of the Limehouse Cut, and at this point the Company have put a pumping station, to pump from the low level as the tide is either rising or ebbing, to keep up this navigation to its head, to make up for the loss by lockage of barges going out into the Thames.

23,921. There is a lock at the entrance of Limehouse Cut into the Thames, is there?—There is. These at Bromley are more in the nature of tide gates, and it is at that point where the pumping station is, for lifting water from the tidal river into the navigation.

23,922. Then no pumping takes place at any higher point than Bromley Lock?—Yes, it does.

23,923. No pumping into the navigation?—Yes, I will explain that—the water being pumped into this pond.

23,924. (Sir John Dorington.) Below Bromley Lock?—Yes, at Bromley Lock.

23,925. But, below Bromley Lock, that is 8 feet lower?—Yes, from the old river Lea—the old tidal river—the water is pumped from that into this cut.

23,926. (Chairman.) The Limehouse Cut?—Yes, and this cut is a level pond as far as Old Ford Lock; it is quite level to Old Ford.

23,927. But there are intermediate locks?—There are no intermediate locks: from *here* to *here* is one level.

23,928. There is Bromley Lock?—Yes, but that is a lock where the barges come in on the tide into *this*. Then the gate is closed, but that is always kept at one level—from Limehouse Lock to Old Ford Lock is kept as nearly level as traffic will admit.

23,929. (Sir John Dorington.) That point is where the 8-feet rise is?—Yes. Then again, after the water is pumped into this pond, temporary pumps have been put during the past summer, and once before, at Old Ford Lock, and the water is lifted from this point again into the upper pond—another pond, which reaches from Old Ford to Tottenham, about four miles.

23,930. (Sir George Bruce.) It is pumped into that pond?—Yes; so that really the surplus water pumped at Bromley Lock is pumped over again into the pond higher. Then the water flows back from the upper ponds into the lower again, according to the traffic.

23,931. (Sir John Dorington.) Does that dispense with the 5,400,000 gallons?—Not all, it dispenses with some of it, but not with all of it.

Mr. W. B. Bryan. 23,932. It is considered as water which helps to comply with the condition?—Quite so.

31 Jan. '99 23,933. Some of the five millions is supplied by the fresh water?—Yes.

23,934. And some by the pumped water?—That is so.

23,935. (*Sir George Bruce.*) On occasions?—Yes.

23,936. (*Mr. De Bock Porter.*) Does the Lea Conservancy acquiesce in this arrangement?—Yes, it is a statutory arrangement.

23,937. The temporary expedients, I mean?—In the Act of Parliament there is a clause which states that the companies shall have power to pump from pond to pond, and to provide portions of this statutory quantity of 5,400,000 gallons by pumping back from pond to pond.

23,938. (*Chairman.*) Where is the Waltham Town Lock?—Many miles up here.

23,939. The quantity of 5,400,000 gallons has to be supplied from Waltham Town Lock down to Old Ford Lock?—Yes; here is Waltham Town Lock, and Old Ford Lock is here.

23,940. A little above Bromley Lock?—Yes.

23,941. (*Sir John Dorington.*) Would you divide your map into the lower reach, the middle reach, and the upper reach?—Yes, I can.

23,942. (*Chairman.*) The upper reach extends from the highest intake down to the first lock, above Feilde's Weir?—That is from Hertford; Feilde's Weir is the junction at the river Stort; that would be the first reach.

23,943. Then the second reach extends from the first lock, above Feilde's Weir, down to and including Waltham Town Lock?—That is the second, and the third is all below that. I have divided the map roughly now into the three divisions.

23,944. (*Sir John Dorington.*) There is 5,400,000 gallons, which may be partly supplied by pumping, under Statute?—Yes.

23,945. That (pointing to map), is never supplied by pumping?—Never.

23,946. That has got to have 4,500,000?—Yes.

23,947. And that has got to have 3,600,000?—Yes; those figures are quite correct.

23,948. And they are never supplied by pumping?—Never.

23,949. (*Chairman.*) Do I understand that it is one pond from Waltham Town?—No, there are quite a number of locks between Waltham Town—

23,950. Waltham Town and the Thames?—Yes, quite a large number; there is 60 feet fall from Waltham Town Lock.

23,951. You said some time ago that there was one pond from the Thames up to a point which you indicated, I forget where?—From the Limehouse Lock up to Old Ford Lock, then one from Old Ford Lock to Tottenham Lock. The Tottenham Lock is there, I think. Then you have a number of short ponds above Tottenham Lock—quite a number, because the valley is steep, and they have to lock it more frequently.

23,952. (*Sir John Dorington.*) You have put temporary pumps here, which pump into that pond?—Yes.

23,953. Have you lifted into these other ponds?—We have never lifted it beyond Ponder's End Lock.

23,954. Beyond the bottom in this middle reach?—Not the middle reach but the lower reach; the reason being that it is tidal water—salt water being pumped up here; and if we were to go pumping the salt water up as high as the Ponder's End Lock, it would mingle with the pure water coming to our intake. So that we pump it beyond the Tottenham Lock, but we never pump it into the reach which supplies our intake.

23,955. (*Chairman.*) Is your intake in the lower reach?—That is the point.

23,956. At Enfield Mill?—At Enfield Mill, just below Ponder's End Lock.

23,957. (*Sir John Dorington.*) How is that navigation provided for there, because you do not pump unless the navigation is interfered with, and if it is interfered with in one pond it would be interfered with in another?—The water runs down the navigation, and so it is out

of our control. The navigation has the whole of the water before it can come to us.

23,958. (*Chairman.*) Is that your only intake at Enfield Mill?—That is our only intake, but any water passing down the old river here from below the Enfield Lock; that is where the powder factories are.

23,959. Here is Enfield Mill?—Yes, it is called Enfield Mill, and the Enfield Lock is here. Any surplus water not coming to this mill may pass down the old channel, and join the channel from the intake here at that point.

23,960. (*Major-General Scott.*) The reservoirs are together, are they?—Yes. So it may be said that there is an intake just below Enfield Lock as well as just below Ponder's End Lock.

23,961. (*Chairman.*) You mean to say that the water coming down the old bed of the river Lea below Enfield Lock comes into your intake channel?—Yes, it does; but the bulk of it comes this way, because of the water rights to these mills. It comes through these mills, passes below the lock, and then out of the navigation at that point, and below there we take no water at all.

23,962. (*Major-General Scott.*) You said that some came down there?—Yes, it does; when there is a surplus more than can be taken by this channel into this river, it goes that way.

23,963. (*Chairman.*) Do you take the whole of it—it comes down the channel of the old river Lea?—It all passes to our intakes, and if our intakes cannot take it, it goes over weirs down the old river channel.

23,964. (*Sir John Dorington.*) In fact, until you have depleted the river by your intakes, there is enough for the navigation?—Always.

23,965. And after your intakes you have so far depleted the navigation that you have to pump?—At times.

23,966. Yes, at times?—We did that last autumn, but the head levels for the navigation are always kept up to the proper statutory heights.

23,967. The only thing the River Lea is deficient in, then, is fresh water?—It is deficient in fresh water only at the lower ends.

(*Mr. Freeman.*) Might I ask whether Mr. Bryan has been describing the way in which he pumps water up into the Lea, because we did not hear a word of it.

(*Chairman.*) Yes. I do not know that I can repeat it accurately. Mr. Bryan, just listen to me, and correct me if I am wrong. As I understand, they pump from the old tidal channel of the River Lea, into the navigation channel at Bromley Lock.

(*Witness.*) Yes.

(*Chairman.*) And occasionally they pump water—now my memory fails me—

(*Witness.*) At Old Ford Lock.

23,968. (*Chairman.*) Which is slightly higher up the navigation channel—into the ponds above that?—Yes.

(*Sir John Dorington.*) Into the bottom pond only?

(*Witness.*) That is into the bottom.

(*Major-General Scott.*) As far as Tottenham.

(*Witness.*) That is into the reach which leads, four miles in length, from Old Ford Lock to Tottenham Lock.

23,969. (*Mr. Freeman.*) Do you come to the Tottenham Lock?—Yes; we did last autumn.

23,970. (*Chairman.*) Then, above Tottenham Lock, you pump in water into the navigation channel?—Yes, but not beyond the Stone Bridge Lock. We pump at Stone Bridge Lock into that pond, which is the pond next below that from which our water is taken.

23,971. But you pump no brackish water that could possibly come into the pond where your intake is at Enfield Mill?—None whatever.

23,972. (*Sir John Dorington.*) So that you pump at three places?—Yes. We have pumped at four places. We have a permanent pumping station at Bromley Lock; all the others were temporary.

23,973. (*Major-General Scott.*) What is the highest lock up to which your pumped water will reach?—Do you mean by the permanent pumping station, or by the temporary ones?

23,974. (*Chairman.*) Any ones?—We have pumped up to the Stone Bridge Lock.

23,975. (*Major-General Scott.*) And there is a rise there of how many feet?—I think, speaking from memory, it is about four or five feet.

23,976. Then that is the impediment to the pumped water going up here?—It is.

23,977. (*Chairman.*) Do you wish to correct Sir Alexander Binnie's table of the rates per head supplied by your Company?—Some of the figures were not quite correct, but I do not think they are really very material.

23,978. Very well, if they are not material, for Heaven's sake let us pass that over. Now, with regard to the wells of your Company, are there some figures of Sir Alexander Binnie's that you want to correct?—Yes; it is the table handed in at Question 1047.

23,979. The figures in that table are taken from the Water Examiner's Monthly Returns, are they not?—Yes.

23,980. Therefore, those are the quantities that you were pumping from 1892 to 1896?—The quantities given there are quite correct, but they do not show, in any way or shape, the available quantities.

23,981. In 1898 we were pumping the 11 million gallons a day, and the reason that those figures show such small averages are, that the wells were under construction at the time. Any well that is not finished we do not pump, when we have sufficient water from other sources; while our reservoirs remain quite full, we leave such wells as are finished unpumped, because it enables us to get more water during long-continued drought. We make use of the chalk as an underground storage reservoir. Last autumn we pumped about 11 million gallons a day, and, at the end of the pumping from the wells in December, we found no diminution whatever in the yield of any of our wells.

23,982. (*Major-General Scott.*) Question 1047 is: "Can you give the actual quantity got from the wells and springs?"—The actual quantity is correct, but the inference to be drawn from that would be that our wells did not yield the amount of water that I have stated they would do.

23,983. (*Sir John Dorington.*) They were not, in fact, yielding it?—That is so, but they are capable of yielding it, and did yield the 11 million gallons a day.

23,984. (*Chairman.*) Are they capable of yielding more than that?—They are, and they are yielding more at the present time.

23,985. What are they yielding at the present time?—I ought to have qualified that answer, because we have drowned out two of our wells. The machinery has been overcome since I was here last, and we cannot go on with our tunnel driving any further until we get more pumps down into the wells. We have struck such fissures as have drowned us out, but we have at the present moment more than 13 million gallons available as soon as we get the new engines, which are being erected, completed and at work.

23,986. Is that the maximum that you can get from those wells—13 million gallons a day?—By no means.

23,987. Can you at all fix what the maximum will be?—I cannot.

23,988. (*Sir John Dorington.*) What were you pumping last July or August?—In July we were pumping about 7½ millions; in August we were pumping nearly 10 millions; besides that, we were pumping from one well which was in course of construction, and the amount we could not measure.

23,989. What did you get in October?—Very nearly 10 million gallons.

23,990. You have never yet pumped 13 millions, then?—No, we have pumped a little over 11 millions, but when we take the average for a month there are certain stoppages, sometimes on Sunday, and sometimes for repairs, which, of course, lower the average.

23,991. (*Mr. Pember.*) I thought you said you were now pumping over 13?—No, we are not pumping that, but we have that available. We are not pumping, because we are drowned out.

23,992. (*Sir John Dorington.*) Practically you have proved that you can pump 11 million gallons?—We

have, and we are putting down more machinery, which will secure the 11 millions, in the case of stoppage, with one or two engines. As we find the water, we put down more engines.

23,993. Then your pumping machinery will now go beyond 11 millions?—Yes, it will go very much beyond. The pumping machinery we have erected already and in course of construction will go to considerably more than that.

23,994. (*Mr. Pope.*) What is down and available for pumping is much beyond that, is it?—Much beyond that.

23,995. (*Major-General Scott.*) Provided there are no stoppages?—Yes.

23,996. But there must be stoppages?—There must be.

23,997. So the effective supply is 11 millions?—Yes, it was.

23,998. I mean, if the thing is inevitable which checks the supply, you cannot rely upon that supply without making allowance for those accidents?—Yes, we must make allowance for those, because we have to raise the buckets of the pumps about every 8 or 10 months to repack the buckets, which means, perhaps, a three days' stoppage, and that reduces the average for that particular well. But the new machinery that is being erected at the present time will more than enable us to get the 11 millions, even allowing for one or two engines being stopped for re-packing of the buckets or other repairs.

23,999. (*Chairman.*) I forget the number of millions that Lord Balfour's Commission estimated for your wells?—Ultimately 20, and we shall get the 20 easily.

24,000. (*Major-General Scott.*) They estimated a total of 40 millions altogether out of the Lea valley, did they not?—Yes.

24,001. Do you know how much the New River were pumping last year, when they were helping you?—No, I do not. I know it was over 20 millions.

24,002. It was something like 25, was it not?—I think Mr. Francis gave it in his evidence, but I cannot charge my memory with it.

(*Mr. Pember.*) I rather think the last figure we had was from 29 to 30 millions.

(*Major-General Scott.*) I think it was. If you add that to the ultimate supply that the East London expect, that would make 50 millions, would it not, nearly?

(*Mr. Pember.*) I have got a note of it somewhere, but, unfortunately not here. I think, also, Mr. Francis said that he could rely absolutely upon 25, and that he told the Royal Commission so in 1891 or 1892, whichever the year was; and that that, with the 20 of which Mr. Bryan is speaking, made 45; but, to be on the safe side, they took it at 40. He gave that evidence the other day. But he said that now—I suppose with the increased machinery—his company were doing, I think, 29 to 30 millions, or could do it, any way.

(*Mr. Freeman.*) The reference was to paragraph 180 of the Report of the Balfour Commission. "We are of opinion that an average daily supply of 40 million gallons can be obtained from wells and springs in the chalk in the Lea Valley."

(*Mr. Pember.*) Quite so, and Mr. Francis said, in speaking of that: "We gave evidence in 1892 to the extent of 45 millions, but, to be on the safe side, they took it at 40." That is what he said.

(*Chairman.*) The 40 covering both the New River and the East London.

24,003. (*Mr. Pember.*) Yes, my Lord. (*To the witness.*) All your wells are in Middlesex are they not?—In Essex.

24,004. In Essex; there are none in Hertfordshire, I mean?—There are none in Hertfordshire.

24,005. (*Chairman.*) At present you have only contributed 11 millions to that total of 40?—That is so.

24,006. (*Mr. Pember.*) Colonel Lockwood gave me—if you will forgive me, my Lord, putting this question—14 millions from wells as your fairly available resources; is that correct?—Yes. Since last autumn, as I have just stated, at two of our wells operations have had to be suspended because we have been drowned out. We were nearly at the capacity of our pumps when we struck fissures, and the men have had

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Mr. W. B. Bryan. to go off the well because the pumps were not sufficiently powerful to keep the water down to allow them to go on tunnel driving.

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24,007. (*Chairman.*) When did that drowning out occur?—In one case at the end of December and in another case about a month ago.

24,008. December was shortly after the great drought?—It was.

24,009. (*Mr. Pember.*) Might we fairly call your present supply from wells 14 millions and your future supply 20 millions?—Yes.

24,010. (*Mr. Pope.*) Capacity, not supply?—Capacity.

24,011. (*Major-General Scott.*) Is your ultimate supply 20 millions?—I cannot say what the ultimate supply may be. I hope that the 40 millions that has been supposed to be the ultimate yield of the chalk in the Lea valley may be falsified by what we may get, because that 40 millions only represent two inches of rainfall on the valley above Feilde's weir.

24,012. Are you going to try to get more in fact?—We are going on. As long as our pumping machinery can keep the adits dry our men go on tunnelling, and when we get more water then I go to my Board and ask for more money for more engines.

24,013. Do you go for more money for more wells?—I have no need to go for more wells at present because we have more water in our present wells than we can lift. It is simply extending the tunnels from the bottoms of our present shafts. To show the recuperative power of our wells after long pumping I should like to make one observation. In July, August and September we had the water pumped out of one of our wells at Walthamstow. After pumping continuously for 61 days we had to stop one Sunday for some repair or something. In that one day the water rose 108 feet, and it was pumped out again the next day, showing that after that long continued period of pumping, taking two or three millions of gallons a day from that one well, immediately we stopped on the Saturday night, by Sunday morning the water had risen about 108 feet.

24,014. By Monday morning do you mean?—By Sunday morning.

(*Chairman.*) I see Mr. Francis did say that he pumped 29 million gallons a day from the wells existing in 1892. That is at Question 22,787.

(*Mr. Pember.*) Yes, I knew he had said that.

(*Witness.*) They were helping us at that time, and consequently they were taking a large supply from their wells.

(*Mr. Pember.*) They can do it. That is the point.

24,015. (*Sir John Dorington.*) If you had had adequate pumping power, do you think you would have kept down a good deal of your difficulty last summer?—No. In all our wells we pumped just about the yield of them. Immediately the drought was over we put on the men to go tunnelling, and in a very few weeks at two of the wells we were drowned out, although it might have been thought that the continuous pumping by the New River and by the East London throughout the whole of the drought would really have depleted the chalk to a considerable extent. But instead of that we went and struck a fissure and were drowned out.

24,016. (*Chairman.*) I think we have had the history of your storage reservoirs already. I will take it very shortly, therefore, with you. How far back did you forecast the necessity of increased storage?—In 1890.

24,017. That was before Lord Balfour's Commission?—Yes.

24,018. Then we know that in 1893 your Bill for fresh storage reservoirs was rejected?—Yes, it was.

24,019. And afterwards passed by one vote?—Yes.

24,020. In 1897 you promoted another Bill to further extend your reservoirs?—Yes.

24,021. The result being that with the storage reservoirs authorised in 1897, you will have a storage capacity of 2,215 million gallons?—Yes.

24,022. Are you promoting a further Bill for next session?—Yes.

24,023. To increase the reservoir capacity?—Yes.

24,024. To what extent?—I have not got the exact figures out; but, approximately, 5,000 million gallons.

24,025. (*Mr. Pember.*) Was your storage up to 1893, only 610?—That is all.

24,026. I rather thought it was about 750?—No; 610 was the only available.

24,027. (*Major-General Scott.*) Am I to understand that the Bill which you are promoting, at present provides for 5,000 million gallons storage?—I have not got the exact figures with me, but it is about that.

24,028. (*Chairman.*) Have you got out the cost of what that 5,000 millions storage will be?—Yes, it will be about a million.

24,029. (*Major-General Scott.*) Does that approximate to the amount of the deficiency which according to Sir Alexander Binnie's diagram that he showed us yesterday, would exist in a year of drought?—Approximately, Sir Alexander Binnie's assumptions were 32 millions a day, plus 5·4 millions—37·4 millions altogether. Consequently his diagrams provided for more than my calculations have. I have provided for 30 millions; Sir Alexander has gone two millions more than I have.

24,030. He included the navigation water?—Yes, he did; but Sir Alexander Binnie omitted to deduct from his diagram and from his calculations all water flowing into the river Lea below Feilde's weir. There is a very considerable volume of water coming into the Lea below there; there is the Enfield Wash, Cobbins Brook, and the Ching Brook, and also the Company's intercepting river or drain, so that those figures should be taken into consideration, and Sir Alexander Binnie's diagram modified to that extent.

24,031. (*Mr. De Bock Porter.*) Is the expenditure authorised that will enable you to deal with the water that you have just referred to as coming from the wells, or are you including that in the Bill for the present year?—That was included, I think, in the general powers in the Company's Act of 1894.

24,032. That authorization has been made?—Yes.

(*Mr. Pember.*) We had a Bill in 1897, but whether there were capital powers in it I am not sure—I am informed there were.

(*Witness.*) And in 1886 as well. That was particularly brought before the Committee.

(*Mr. Pember.*) Then you may take it, sir, if I may venture to say so, that the capital powers of 1899 will not have any reference to that.

24,033. (*Chairman.*) Sir Alexander Binnie told us yesterday that you would require 5,220·9 million gallons of storage in addition to what you have got already?—On Sir Alexander Binnie's assumption of 32 millions, plus the 5·4 millions.

24,034. For what; do put it in language that is intelligible, because it goes on to the notes, and six months hence it will be unintelligible—32 millions drawn from the Lea?—Yes.

24,035. And 5·4 millions reserved for the navigation of the Lea?—Yes.

24,036. All that would have to come from the Lea?—Yes.

24,037. Then your extra supply must come from wells?—And from the Thames. Sir Alexander Binnie's table and all his figures were assumed. He says on the diagram: "Assume this, assume that, and assume the other." Assuming that his assumptions are correct, his diagram is correct; but if Sir Alexander Binnie had allowed for the water entering into the river Lea below Feilde's Weir, his diagrams would want modifying to that extent.

24,038. Why? Do you mean that you would be able to take more than 32½ million gallons a day from the Lea?—No.

24,039. Or what?—Not more, but it would have reduced the 5,200 millions to a lower figure.

(*Mr. Pember.*) Because we should not then have to supply so much for the navigation, do you not see? That water comes, as he will show you, into one of the ponds of the navigation to which we are obliged to come if they ask for the 5,400,000 gallons. (*To the witness.*) Perhaps you had better just show his Lordship where those affluents come in.

(*Sir John Dorington.*) Part of the 5,400,000 gallons which he adds to the 32 millions might be taken off.

(*Mr. Pember.*) Yes.

(*Sir John Dorington.*) In consequence of the influx of the other water.

(*Mr. Pember.*) That is it, and now he is going to show you where these affluents will be; and, therefore, less reservoir space will be required.

(*Witness, explaining on the map.*) This is the point of gauging at Feilde's Weir. At Waltham Abbey, there is an affluent called the Cobbins Brook, and at the mill below there is another, called the Turkey Street Brook, which brings in a considerable quantity of water. At this point there is another stream.

24,040. (*Chairman.*) Do not say "this point"?—There is no name to give it. I will give it to you with reference to its position. Below Chingford Mill the Ching Brook enters, but it does not enter above our intake; it enters below our intake, and so the navigation gets the benefit of these three affluents.

24,041. One of the affluents or two of the affluents you have just mentioned are above your intake?—Yes.

24,042. (*Major-General Scott.*) But not above Feilde's Weir?—They are below Feilde's Weir, and Sir Alexander Binnie's figures have been based on the gaugings at Feilde's Weir.

24,043. (*Sir John Dorington.*) What do those brooks bring in?—It is almost impossible to tell. Like all brooks coming over rather hilly ground, they vary very much indeed.

24,044. (*Mr. Pember.*) I suppose they carry a substantial amount?—Yes.

24,045. (*Sir John Dorington.*) Could you give us any estimate by which we may reduce that 5,400,000 gallons?—It is very difficult for this reason, that there is no storage attached to any of those streams. Sometimes they are running at the rate of 60 or 70 million gallons a day, and then, in the middle of a drought like last year, they come, practically, to perhaps one million, or something under a million gallons, the three of them combined.

24,046. How do you find out, then, that you have complied with your statutory condition of giving 5,400,000 gallons, when you do not know what is coming in from those streams?—That is within the control of the Conservancy Board. We have no control whatever in the matter ourselves.

24,047. You say it does not depend upon your gaugings over Feilde's Weir at all; it depends upon what these other affluents gave after passing Feilde's Weir?—The trustees of the Navigation, or, rather, the Lea Conservancy Board, keep the navigation to the statutory head levels in the different ponds. Down as far as our intake, the whole flow of the river is passing through them; beyond that there is much less flow, and only such flow as is within their control, depending on the amount of traffic in the navigation.

24,048. Virtually, they take it like this—that, provided there is water enough for navigation, they disregard the number of gallons that is supplied?—I suppose so.

(*Sir John Dorington.*) If they want more, they open the slackers of the locks, or they send a larger number of extra locks down; but that is absolutely within their control; my company have nothing to do with it.

24,049. But you have got to supply them with 3,600,000 gallons in the upper reach, and, practically, you say they do not know anything at all about it?—No, it is the other way about; they are the first takers. We take what they leave.

24,050. In the upper reach?—Yes.

24,051. (*Mr. De Bock Porter.*) But in the lower reaches, did they call your attention to the deficiency in the water for traffic purposes?—Yes; they did last year.

24,052. And did they suggest that you should increase it?—Yes, and we pumped, and, day by day, if the water began to reach the head level with a tendency to lower, arrangements were made by which the pumping could be started immediately.

24,053. But they called your attention to that, I suppose?—Certainly.

(*Mr. Pember.*) You see we are not bound to send down, as a rigid rule, the 3·6 millions, or the 4·5 millions, or the 5·4 millions. It is only this, that the trustees have a call on those amounts if they choose to ask for them. I think the evidence has

always been that they have never asked for any amount that we have not been ready to give. The only suggestion has been, and it is a pleasant one, of course, that the trustees are so under our thumb, that they never do ask us for what they want.

24,054. (*Major-General Scott.*) I should like to call your attention to Question 23,145 in the evidence of Sir Alexander Binnie given to us yesterday. The question put by his Lordship was, "What are we to conclude from that?"—that was his previous statement. His reply is: "Looking to the future, and taking into account the inevitable increase of population in the East London Company's area, the Lea is, for all practical purposes, exhausted; and to construct in it further reservoirs of larger capacity would only lead to a wasteful expenditure of money; that is to say, you would have to make these big reservoirs of this 5,000 and odd million gallons, to provide against a very remote contingency. It is a wasteful expenditure of money in that sense—that you had better go to some other source which is more bountiful. You have got so near to the end of the possible supply from the Lea." What do you say to that evidence?—I fear it is rather prejudging our case before we get into Committee in the two Houses. We have had the very best engineering advice in this country upon the point, and it is on their advice, and my advice too, that my directors are acting. Perhaps it would be hardly fair that I should enter into the details, as I should have to be cross-examined about this before the Committees of the Houses.

(*Mr. Pember.*) Is it not covered by this, my Lord? Sir Alexander Binnie has told you, over and over again, that he means to rely for his supply to London on the 185½ million gallons of water taken from the present sources. This water, for which we are taking credit, and for which we provided this 5,000 millions storage, is part of that 185½ million gallons: that is to say, it is to make ourselves certain of getting our 30 odd millions from the Lea. Now, if Sir Alexander Binnie says that that is a waste of money, it is proof positive that he is not going to use the 185½ million gallons to that extent.

(*Major-General Scott.*) I cannot follow that, Mr. Pember.

(*Mr. Pember.*) It is very simple, sir, I think. Sir Alexander Binnie says: I am reluctantly going to take 185½ million gallons from the present sources. Those 185½ million gallons are from the Thames. Very well—

(*Chairman.*) The Thames and the Lea, and wells.

(*Mr. Pember.*) No, from the Thames.

(*Chairman.*) From the Thames, I beg your pardon, yes.

(*Mr. Pember.*) And if he means to say that he is going to give up the Lea, and the wells, see what he is going to sacrifice.

(*Mr. W. H. Dickinson.*) He is not going to.

(*Mr. Pember.*) Very well, if he is not going to, we say, and he says, that to utilise all the present supplies on the Lea we shall want 5,000 million storage more.

(*Chairman.*) Yes, but Sir Alexander Binnie says that is a wasteful way of making safe your Lea supply, and you will do much better by going to some other more bountiful source.

(*Mr. Pember.*) That means we must sacrifice the Lea supply *pro tanto*.

(*Chairman.*) Not sacrifice it; but not bring it to such a condition that it can meet a year of drought like the year 1898.

(*Mr. Pember.*) If we can do that for a million, then I am willing to say that will add a million on to the estimates we shall give you for the Thames and the Lea supply. But it will not bring out, as I shall hope to show, anything like the cost of going to Wales.

(*Sir John Dorington.*) What he says is that the additional cost on the Lea is wasteful, because you could not fill that storage in a year of drought.

(*Mr. Pember.*) He did not say that.

(*Sir John Dorington.*) What he did say amounted to that.

(*Mr. Pember.*) I do not think so; excuse me, I may be wrong.

(*Mr. Freeman.*) Most distinctly, he said so.

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Mr. W. B. Bryan. (Major-General Scott.) No, I think the argument was that the reservoirs would be practically idle for so many years, the money would be practically idle, and that for so many years the money would be sunk.

(*Mr. Pember.*) That is another thing.

(Major-General Scott.) And would be only occasionally used.

(*Mr. Pember.*) That I admit he said, but I do not admit he said they would never get filled.

(*Witness.*) I might go so far as this, my Lord—to say that I do not quite agree with Sir Alexander Binnie on this point. Even during the last five years—five years of very deficient rainfall—the average flow of the River Lea has been 101 million gallons, and that only represents 5 inches of rainfall.

24,055. (*Mr. Pember.*) What is the rainfall in the valley?—I should think it would average, taking higher up than Feilde's Weir, about 25 or 26 inches.

24,056. (Major-General Scott.) How often would the full capacity of this 7,000 million gallons which is to be provided be brought into use?—It would be in constant use, of course.

24,057. But it would not be a necessary use; it might be a convenience, but not a necessity; you would not require every year the use of 7,000 million gallons of storage?—Clearly not.

24,058. In ordinary years, with your present population, your existing storage would suffice, would it not?—Yes.

24,059. Then there will be an occasional use of these 7,000 millions—but how often?—That, of course, I cannot say. It is utterly impossible for any one to say. One could not have foreseen last year's drought.

(*Mr. Pember.*) Why should it be more wasteful to store for the conditions of 1898 on the Lea than it would be to store for them on the Thames? He says: I am going to use 185½ million gallons on the Thames, and I am going to store for them under the conditions of 1898. Why is it more wasteful to do the same thing on the Lea than to do that on the Thames?

(*Mr. Freeman.*) Who are you cross-examining now?

(*Mr. Pember.*) It is to the public in general.

24,060. (*Chairman.*) I suppose there is no denying, Mr. Bryan, that the conditions of last year do throw, both upon the Thames companies and upon the Lea companies, the necessity of providing an amount of storage which is excessive for a great many ordinary years?—That is so, clearly.

24,061. Then the question remains, whether even that excessive expenditure, which is not to be useful, and not to be called upon to its full extent, excepting in abnormal years, is better or worse than the expenditure of going to what Sir Alexander Binnie calls a more bountiful source?—I wish Sir Alexander Binnie had stated which was his more bountiful source.

(*Chairman.*) You may assume Wales.

(*Mr. Pember.*) At any rate, that is a question of figures, my Lord, after all.

(*Chairman.*) Yes, it is.

(*Witness.*) Of course, in all large waterworks you have, if you are to keep up a continuous supply, to make your storage reservoirs so great that they shall furnish a supply when the demand is at its maximum and your sources are at their minimum.

(*Chairman.*) Yes, of course.

(*Witness.*) And that is the reason that very big schemes have to be brought forward—to tide over an abnormal period like last year.

(*Chairman.*) I suppose Sir Alexander Binnie's argument will be this: That if you spend money in going to Wales, you have got a supply which is always available and always useful; but if you spend money in storage reservoirs, it is an expenditure which is called into active use only in rare and exceptional years. I suppose that is the argument.

(*Mr. Pember.*) Well, after all, it comes to a question of pounds, shillings and pence.

(*Chairman.*) Yes.

(*Mr. Pember.*) If we can do that, and make it absolutely certain, we will say, for 10,000,000*l.* or 15,000,000*l.*, and they cannot do the other under

57,000,000*l.*, which is best worth doing? It then comes to this: Is your water so much better than our water, that it is worth spending 57,000,000*l.* for that, as against 20,000,000*l.* for ours?

(*Mr. Freeman.*) A somewhat imaginary figure that.

(*Mr. Pember.*) What?

(*Mr. Freeman.*) A very imaginary figure, as you know.

(*Mr. Pember.*) I have got it in black and white, so you need not deny it; 57,000,000*l.* is your cost, with the interest added.

24,062. (*Chairman.*) What Mr. Pember has just said is, of course, that both the Thames and the Lea storage schemes, upon the scale of 1898, have imposed upon you a recurring expenditure which will only be rarely necessary?—Quite so.

24,063. (Major-General Scott.) But I suppose the argument will be that, at the present stage of the draught on the Thames, it would be more economical to store on the Thames than to store on the Lea?—Yes, probably that was what Sir Alexander meant—perhaps not his Welsh Scheme. Of course the larger the natural flow of the river, the less the number of days' storage.

24,064. And the more perennial the river—the more unfailing the river—the less it is already tapped, and the more economical the storage would be of it?—Quite so. As in all the moorland schemes on the West Coast of England, you do not want nearly as many days' storage as you do on the East Coast. If you go to Northumberland, where the rainfall is small as compared with what it is on the Cumberland side, as many days' storage are not wanted on the Cumberland side as on the East Coast.

24,065. The economy comes in because the draught on the Lea, relatively to the average supply of the Lea—the average flow of the Lea—is far greater than the draught on the Thames, relatively to the average flow of the Thames?—It is.

24,066. (*Mr. Pember.*) Is that quite so?—Yes.

(Major-General Scott.) Yes, the draught on the Lea is far greater.

(*Mr. Pember.*) The draught on the Lea is 22 millions of theirs and 30 millions of ours, so that that is 52 million.

(Major-General Scott.) And the average flow is 101 millions.

(*Mr. Pember.*) That is in one particular year, sir.

(Major-General Scott.) Never mind, take any year.

(*Mr. Pember.*) I should say that probably you will find that it is a great deal more than that, and if you did a rule of three sum, I am not sure that the difference between that and the average flow of the Thames would be quite so great.

(Major-General Scott.) I think, if you look in the Report of Lord Balfour's Commission, or the evidence, you will find that the parallel draught of the Thames to that of the Lea would be 600 millions a day, instead of 130.

(*Mr. Pember.*) Ah, but now we are talking, you know, of a draught of 300 or 400 million gallons, as the case may be, from the Thames.

(*Chairman.*) Quite recently we have had it put before us—I forget now by which witness—that the percentage of the total flow of the Lea taken by the water companies was much larger than the percentage taken of the total flow of the Thames.

(Lord Robert Cecil.) I am told that the proportion is about as four is to one; that is to say, in proportion to the flow of the Thames, there is four times as much taken from the Thames as there is from the Lea.

(*Chairman.*) Are these absolute figures?

24,067. (*Mr. Pember.*) I should like to have exact figures, that is, with the present conditions of storage. (*To the witness.*) Have you got some figures there that will bear on the point?—I have the figures that were given by the Chairman just now. The proportions are quite correct.

(*Chairman.*) I did not give the figures, because I do not carry them in my memory. I only remember the fact. I should have said, from memory, that it was 44 per cent. in one case, and much more in the other; It was recently given to us, I know.

(*Witness.*) That fact that you gave, my Lord, is quite correct; that the proportion drawn from the Lea by the companies, compared with its total flow, is much greater than the proportion taken by the companies from the Thames, compared with the Thames total flow—very much greater.

24,068. (*Major-General Scott.*) Therefore, storage on the Thames is more economical than storage on the Lea?—Yes.

24,069. (*Chairman.*) The argument put against you, as I understand, really is, that you spend large sums of money on storage which is only wanted and only comes into beneficial use now and then, and at remote and uncertain intervals, and that that is a wasteful way of spending money, compared with an expenditure which taps a perennial and constant supply, so that every shilling you spend is useful in actually bringing water that you want, or may want?—That is so; but, on the other hand, from our point of view, we have to spend many hundreds of thousands of pounds in conduits to bring the water.

(*Chairman.*) So be it; it may be that the total expense on the one, although it is an expense that gives a return immediately, and always may be much greater than the total expense on the other, which is only in occasional use.

(*Mr. Pember.*) What is in Mr. Bryan's mind, if I may venture to divine it, is this: Comparing the Thames and the Lea, if you were to store my 5,000 million gallons, he says, on the Thames it might be, by the time I brought it across London to my own system, that I should have spent as much money as if I had stored it on the Lea.

(*Witness.*) Yes.

24,070. (*Chairman.*) Were you thinking of that?—Yes, that was my point.

24,071. Now let us go to another subject. It has been said that the money raised under your Acts of 1894 and 1897 does not increase your power of supply; what do you say to that?—The new reservoirs enable us to collect and utilise, and the new mains enable us to distribute, increased quantities of water.

24,072. Therefore, you say that it does increase your power of supply?—Yes.

24,073-4. Have you anything to say about short supply in 1895 and 1896?—I think I told you everything I had to say about that when I was before you on a previous occasion.

24,075. Very well, then, I will pass that over. Do you corroborate what Colonel Lockwood told us about waste being wilful in your district?—There has been a great deal of wilful waste, and during last autumn there was. On the other hand, we had an immenso number of letters from our consumers, calling our attention to waste in different places, and asking us to put a stop to it. We had a great deal of help from consumers in one way, and the reverse in another.

24,076. (*Mr. Pember.*) Part of your statement, that the waste last autumn was wilful and careless, comes from the consumers themselves?—Yes. We had large numbers of letters calling our attention to wilful waste.

24,077. (*Chairman.*) Did the examination that you made into the matter tend to show that the waste was due to people leaving their taps open, in order to make sure that whenever the intermittent supply came on, they might fill their storage vessels?—There is no doubt, I think, that a good deal of it was due to that.

24,078. It was not wilful in the sense that the people were letting the water run to waste in order to injure and embarrass the company?—No, but in some cases we had letters stating that they should leave it on purpose to spite us, as they termed it in the letters.

24,079. Can you produce any such letters—

(*Mr. Pember.*) I wish you would produce one of those letters if you could.

(*Chairman.*) It is a serious statement to make.

(*Witness.*) Yes, I can produce some, but I have not them with me now.

(*Mr. Pember.*) I wish you would produce them, it would be interesting.

(*Witness.*) I will try and look them up. I do not know whether they are all kept; there are so many thousands of letters of different kinds.

(*Mr. Pember.*) I wish you would look them up; if you could, it would be meat and drink to me. I am told there was one in the "Times" advising the people to do it. Just you look that up.

24,080. (*Sir John Dorington.*) Was there any removal of fittings, such as taps, so as to cause the pipes always to be open?—We are constantly finding that fittings are being removed, but they are very quickly repaired, because if a tap is cut off in the house, it makes so much damp and so much wet that they immediately apply to the company.

24,081. In fact, the nuisance of their taps running is so great to themselves that they try to keep them shut? Yes; sometimes the taps are removed bodily—cut off and stolen, but not nearly so much as 10 years ago.

24,082. If a tap is cut off with the intention of stealing it, and making away with it and selling it, of course, the pipe is open; does that cause a nuisance—the water goes away by the gutter, I suppose?—Very often. These pipes are in the back yards which can easily be entered. The water runs away into their drains, but it makes the walls damp, which they complain of.

24,083. (*Chairman.*) Of course, if a tap is removed the water runs straight out of the pipe into the backyard?—Yes it does but at the present time there is little waste in the district compared with what there has been in the past—very little waste indeed.

24,084. Is that due to your taking extra precautions to prevent it?—Yes. A large number of additional inspectors have been appointed and they get round to the various houses and inspect the fittings more quickly than formerly. In addition to that we have the whole district cut up into small sections, each of which is governed by a meter. Everyone of these meters is read now and then. Each has a paper diagram upon it which gives the exact condition of the flow of water in that particular district night and day. The pipes are stethoscoped and examined and any waste of water is very quickly detected now.

24,085. If you had taken those precautions a little earlier, you would have prevented the waste last summer that you have described?—We had taken them earlier, but as soon as the intermittent supply was given we could not apply that system—only the inspection from house to house.

24,086. (*Sir John Dorington.*) Is there any objection made to the inspection?—No. As a rule all our inspectors are met very amicably throughout the district. I have no fault to find with the attitude of our customers to our officials, we are met very well indeed.

24,087. Do they visit the houses once a month?—I cannot say the exact period, because it varies in different districts, for this reason: meter readings are taken, and if a very large amount of waste is shown by these meters an inspection takes place. Another meter reading is taken say three weeks later. If the waste still continues, another inspection is again made from house to house. So that in some cases they would get an inspection within a month, in other cases not within three months or four months, depending entirely on what the meters showed is the waste in each particular district.

24,088. I only want to know whether the inspections are so frequent that people might get offended about it—you say no?—As I have just said, all our inspectors are met in a friendly manner. I have no fault whatever to find with their attitude to us.

24,089. Do you agree with Sir Alexander Binnie that the powers of inspection granted to corporations could not be safely given to companies?—No, I do not agree with Sir Alexander Binnie upon that point.

24,090. (*Chairman.*) What powers do you allude to?—Testing and stamping fittings principally.

(*Mr. Pember.*) Say the Bradford regulations, my Lord. See 1453.

24,091. (*Sir John Dorington.*) You have not got that power?—No.

24,092. And you do not want it?—That is a very difficult question to answer. We once included in one of our Bills the powers copied verbatim from the Manchester Corporation Waterworks Acts, and this seemed to give great offence to all the local authorities and we withdrew it.

24,093. (*Mr. Pember.*) That was in 1893?—Yes.

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Mr. W. B. Bryan. 24,094. (*Chairman.*) Offence to the local authorities?—Yes.

31 Jan. '99 24,095. (*Sir John Dorington.*) That is to say, the local authorities thought you were taking too much power into your own hands?—They did.

24,096. Would the local authorities be inclined to exercise those powers on your behalf?—I do not know, I am sure.

24,097. (*Chairman.*) The powers of doing what, do you say?—Testing and stamping all the fittings, to ensure that they are of a proper weight and strength, to resist the pressure of the water in the district.

24,098. Have you not the power to examine fittings now, before you give a supply to a house?—We have; but we have no power to test them and to stamp them before they are put in.

24,099. (*Sir John Dorington.*) That is to say, you think there should be a bye-law or regulation that no taps or any other fittings which have not received the stamp of your inspector should be applied to any pipe?—Yes.

24,100. That is a power possessed by corporations?—Some corporations have that power, others have not. They have obtained the powers in their private Acts.

24,101. You tried to get that power, but Parliament would not give it to you—

(*Mr. Pember.*) No.

(*Witness.*) The opposition to it was so great we withdrew it. The different local authorities objected strenuously to such powers being given to the company.

24,102. (*Sir John Dorington.*) If you had had that power, you think you could have exercised it?—Yes, and I think it would have been of great advantage to the consumer as well as to us.

24,103. (*Mr. De Bock Porter.*) Do not some of the companies exercise that power to a certain extent?—We exercise it in this way. We test and stamp fittings free, and we try to persuade all makers of fittings to send them to us so that they can be examined in our shops before going into the district. When the fittings go into the district with the stamp on from our testing shops, the foreman knows that the particular fitting is a good one, and he has no further question to make about it.

24,104. (*Chairman.*) But you have, as I understand, already the power to examine fittings before you give a supply to any house?—Yes, we have.

24,105. Cannot you examine, so as to satisfy yourselves, as to whether those fittings are in a proper condition or not?—We are in this unfortunate position, that if a fitting of any kind does not leak for the moment, that is a fitting within the meaning of the regulations. If a tap has a cardboard washer on it, and does not waste water at the moment it is put on, although it may waste water a fortnight later, we cannot reject that.

24,106. (*Mr. Pember.*) Have you any power—as far as I remember you have—to insist on the maintenance of good fittings?—Only when they leak, and if the fittings are out of order. There have been a good many decisions before the magistrates upon this point; one magistrate held that if a fitting, no matter how inferior it might be, did not leak at the time it was put on, it complied with the regulations.

24,107. (*Chairman.*) And if it went wrong a week after, you had no remedy?—Yes, when it went wrong we had a remedy, but not till then.

(*Mr. Pember.*) Then it might have been doing a great deal of damage in the meantime.

24,108. (*Chairman.*) What is your remedy—to cut off the supply to that house, or what?—After the waste begins, not before. We cannot interfere with it until the waste is actually occurring. Our remedy is a persuasive one for a very considerable period before we cut off. We first send an inspector and serve a notice, then serve a second notice a week later, then perhaps a week or a fortnight later we serve another. If we cannot then get it repaired, and the waste is great, our only final remedy is to cut off the supply.

24,109. (*Mr. Pember.*) That is your method?—Yes.

(*Mr. Pember.*) Would you like to hear the section, my Lord?

(*Chairman.*) Perhaps you may as well read it while we are on this point.

(*Mr. Pember.*) "If any person supplied with water 'wrongfully does'—I leave out unnecessary words—'anything in contravention of any of the provisions of the special Act or this Act for the prevention of waste, misuse, undue consumption, or contamination of water, the company may cut off any of the pipes by or through which water is supplied by them to the tenant or for his use.'"

(*Chairman.*) What section are you reading?

24,110. (*Mr. Pember.*) I am reading now a portion, and I need read no more, I think, of section 32 of the Metropolis Water Act, 1871. The difference between that and such regulations as he suggests is that he says, instead of having to deal with fittings which may be good at the moment, but may go wrong, and then afterwards having to insist on their being set right after, perhaps, a good deal of waste has gone on—if I were allowed to insist on such fittings being put on in the first instance as, from their relative thickness and strength, durability, and so on, will answer for a very long time to come, there will be no waste, and it will be a very much better thing for me and for the consumer—that is what it is, is it not, Mr. Bryan?—That is so; but I am very pleased to tell you that, at the present time, our district, as regards waste from fittings or anything else, is as good as that of any other company in London.

(*Chairman.*) We will adjourn for a short time now.

(*Mr. Pope.*) Before we rise, I should like to ask your Lordship and the Commission if you can give us any intimation at all what course it will be convenient to take in regard to the order in which counsel should address you at the conclusion of the evidence; the evidence cannot last many days longer.

(*Chairman.*) I hope not.

(*Mr. Pope.*) I hope not, too. We shall be very glad, for our own convenience, if the Commission could tell us how they would think it convenient that counsel should deal with the case after the evidence is called.

(*Chairman.*) Very well; I will consult my colleagues, and let you know as far as we can.

After a short adjournment,

24,111. (*Chairman.*) With regard to the charges of your company, they are apparently higher than those of many other companies, are they not?—Yes, they are 5 per cent. uniformly in our district.

24,112. What does that work out upon your actual supply to the different houses?—About 1*l.* 2*s.* per house per annum throughout the whole district.

24,113. How much per thousand gallons supplied?—I have not got the figure, but I believe it is about 4*d.*

24,114. Is it not 5*d.*?—That is including the trade supply, but for domestic supplies it comes out at about 4*d.*

24,115. About 4*d.* for the domestic supply, and 5*d.* for the whole supply, including trade?—Yes.

24,116. (*Mr. De Bock Porter.*) Does your company make any special arrangement with houses of very large value?—Yes, the arrangement is somewhat thus: A large house with large grounds, instead of having it merely upon the assessment, will have it by meter. Their minimum charge is the assessment at 5 per cent. upon its net value, but their additional charges for stables, gardens, and so on, are reduced to one-half. If they take in any quarter more than the minimum allowance, they pay for it. I do not know whether I have made that quite clear.

24,117. That is not quite the abatement that I wanted to know about. You have heard the discussion about the abatement which is made in the City by the New River Company; does your Company make any abatement of that kind for highly assessed premises like a bank, or do you take it on the full value?—I do not know that we have any such premises in our district.

(*Mr. De Bock Porter.*) Surely.

24,118. (*Chairman.*) Have you not got a bank in the East London District?—There are some banks in White-chapel, but they are not highly assessed, they have a very low assessment indeed. We have no premises like the banks in the City, in our district.

(*Mr. Pember.*) They would be only branches.

24,119. (*Chairman.*) Then your answer is negative—you do not make any reduction upon your statutory charges to any highly rated premises?—No.

24,120. (*Sir George Bruce.*) Then you say they are not highly rated, you have got no highly rated ones?—We have not those.

24,121. (*Chairman.*) Do you supply many houses at a loss?—Yes, we do.

24,122. What sort of number?—I should think, approximately, 80,000 houses at a loss.

24,123. What is the total number of your supplies?—197,965.

24,124. So that very nearly half of your supplies are given at a loss?—Approximately half.

24,125. (*Mr. Pember.*) You gave it at 50,000, I think, in 1894?—I think it was; it is about 80,000 now as nearly as I can tell.

24,126. (*Chairman.*) You say, per house, your average gross income is only 22s. 6d.?—Yes.

24,127. (*Mr. De Bock Porter.*) Is the area you have to deal with in the future likely to be covered with property which will be served at a loss or a profit?—I think that in our country districts it is likely that they will be supplied at a small profit. The amount of profit, of course, it is utterly impossible to say, but the tendency now is to get two families into one house for one water rate; the houses are being built in many parts of our district so that you can get two families there.

24,128. But is not each a separate tenement?—In many cases no; in some of the newer houses, yes.

24,129. (*Chairman.*) So that you get two families for one water charge?—Yes.

(*Chairman.*) That does not sound very hopeful, as far as profit goes.

24,130. (*Sir John Dorington.*) Would that be a very large proportion of those 80,000 that you talk of?—The 80,000 are the houses already in supply. In a great many cases, in the East End, overcrowding is such, that I am told there are three or four families in one house. I had a number of houses examined by my foremen so as to ascertain for various purposes (for instance, I have a great difficulty in getting houses for the Company's employees), and I find that in many cases there are two, three, and in some cases four families in one house.

24,131. Is that a considerable proportion of the number of houses that you supply?—I cannot tell you what the proportion is.

24,132. Would it be 10,000 out of the 80,000?—It is almost impossible to say, but I do know in the districts near Whitechapel, and that neighbourhood, the average number throughout the whole of the houses is about 10 persons, and in our country districts, six.

(*Mr. Pope.*) Ten persons on the ordinary calculation of five to a family would give two families to a house.

(*Chairman.*) Ten persons hardly means two families, does it?

(*Mr. Pope.*) Five to a family is the ordinary rule.

24,133. (*Chairman.*) In the result, are your charges per 1,000 gallons higher or lower than those of other water companies?—They are lower than all the other water companies, except the Southwark and Vauxhall, and our income per 1,000 gallons in the year 1897 was slightly higher than the Southwark and Vauxhall.

24,134. How do you compare with provincial water supplies?—As a rule, their income per 1,000 gallons is higher than ours—much higher—in many cases as much as 2d. to 2½d.; ours being 5d., that would mean really 7½d., or, of course, 50 per cent. higher revenue per 1,000 gallons.

24,135. Does that apply to municipal water supplies as well as to private company water supplies?—Yes, it does; in municipal water supplies the income per 1,000 gallons is higher than with the East London.

24,136. (*Mr. De Bock Porter.*) Sixpence is the average, is it not, while yours is 5d.?—I think it is higher than 6d. in most municipalities.

24,137. (*Mr. Pope.*) The question was as to the average?—It varies, of course, but I think 7d. is nearer the average.

24,138. (*Chairman.*) Can you give us any opinion of your own as to having a uniform rate in London?—A uniform rate would be rather a difficult thing to get. You might get it theoretically, but, practically, you could never get a uniform rate. You might get it at so much in the £.

24,139. How many of your 197,000 supplies exceed in rateable value 150l. per annum?—700.

24,140. Seven hundred out of 197,000,?—Yes.

24,141. (*Mr. De Bock Porter.*) You have not of late had any large addition to the 150l. rating; I suppose?—No. As a rule, the houses we are laying on now let from 8s. 6d. a week up to 12s. a week.

24,142. (*Chairman.*) I suppose your district is one destined to be almost perpetually a poor district?—I think it is.

24,143. You say that your charges come to about 5d. per 1,000 gallons?—Yes.

24,144. Can you give us the rate per 1,000 gallons in any other considerable district—the Chelsea or Grand Junction, say?—Yes, I think I can give those.

24,145. If you are going to take Mr. Lass's Tables, we have got those?—The Grand Junction is just a little over 7d. They are all set out in Lass's Tables, and I have them before me.

24,146. We have access to Lass; can you give us any provincial instances?—I can only call to mind one at the present moment—Nottingham, 7d.; there are 300,000 inhabitants there.

24,147. Do you know what Glasgow is?—No, I do not. They have a public rate there, or had, as well as the water rate, and the two want adding together to get the income.

24,148. Of course Glasgow has largely reduced its water charges?—It has much reduced them.

24,149. In fact, the canny Scotsman seems to have done better than the inhabitants of our English towns?—Because he has had the water just at his back door, my Lord, and it has not cost him much.

24,150. (*Mr. Mellor.*) Did I understand you to refer to Nottingham?—Yes.

24,151. What was it at Nottingham?—7d., and the supply is to 300,000 people.

24,152. Where is the Nottingham supply taken from—the Trent?—It is taken from the new red sandstone entirely.

24,153. From wells?—From wells.

24,154. Entirely from wells?—Entirely.

24,155. (*Major-General Scott.*) Do you know what the consumption per head is at Nottingham?—The consumption per head last year at Nottingham was about 17 gallons per day, including all trade and other purposes.

24,156. And yet they had to charge 7d.?—It works out at 7d. on the rating.

24,157. (*Mr. De Bock Porter.*) Do they make any profit on their water undertaking?—They made a little last year.

24,158. (*Sir John Dorington.*) Did they buy a water company, or did they initiate the undertaking?—They bought a water company.

24,159. (*Sir George Bruce.*) That water company had always constant supply, I think?—Always. It was the first in England. Mr. Hawksley had to do with it 70 years ago.

24,160. (*Mr. Mellor.*) Can you tell me with regard to Leicester?—No, I cannot, with regard to Leicester. I know the approximate amount per head per day, but I do not know their revenue.

24,161. They are about to get a fresh supply, are they not, for Leicester?—They are going to Parliament this Session.

(*Mr. Freeman.*) They are trying.

(*Mr. Pope.*) They are going to Parliament anyhow.

(*Mr. Mellor.*) I hope they will succeed.

24,162. (*Chairman.*) I do not know whether you can tell us anything, or have any observations to make about the financial results of the purchase of the water companies?—Perhaps, as my chairman has already given evidence, I had better leave it alone.

24,163. Very well. Have you yourself experience of municipal management?—Yes, I have.

24,164. As well as of company management?—Yes. I was a municipal engineer before I came to be Engineer to the East London Company.

24,165. What is your experience of municipal management; your chairman had not that?—I think, as a

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Mr. W. B. Bryan. rule, municipal management is a little more expensive than company management.

31 Jan. '99 24,166. Why?—There is not much power given to the officials—more has to be relegated to committees—and there is a little more red tape, necessitating a rather larger staff than would be the case with a trading company.

24,167. The whole staff of directors is got rid of?—I was meaning the executive staff, not the directors.

24,168. Why should a corporation or a municipal body require more subordinate agents, more permanent officials, than a company?—I think there is a great deal more reporting and a great deal more office work always; it always is so.

24,169. What has your experience in municipal management been?—I have been Chief Engineer to the Blackburn Waterworks.

24,170. Any other?—Not as chief; merely as a subordinate official.

24,171. Where?—At Nottingham and at Burnley.

24,172. (*Mr. De Bock Porter.*) Would there not be a very large saving in the collection of rates?—No, I do not think there would in the collection, because with most municipal water undertakings the rates are collected in precisely the same manner as companies collect them; they have a separate staff of collectors for the water rate, quite distinct from their borough rate.

24,173. Surely that is a very cumbrous machinery, is it not?—The corporations think they know how to manage their own affairs very well, and they have separate staffs of collectors. I cannot call to mind a single town where the district or borough rate is collected along with the water rate. There may be one, but I do not know of any.

24,174. (*Mr. Mellor.*) Is there any reason that you are aware of why that should be done?—Yes; I think the reason is this, that the water rates are not based in the same manner as the other rates. There are so many extras—stables and water-closets; then trade supplies get mixed up with them, so that you cannot very well collect as you would a mere poundage upon the net annual value.

24,175. (*Chairman.*) The trade supplies are all by meter, of course?—Yes.

24,176. Therefore, the collector must read the meter before he collects?—Yes, and make an account out, because, of course, the quarterly meter would vary enormously.

24,177. (*Mr. De Bock Porter.*) With regard to all the private houses, the rate must be the same from year to year?—It may be the same from year to year if there are no alterations made to the houses; but you could not put down a shilling in the £, or whatever the statutory charge was, along with these other rates, because that is disturbed on account of the extras—water-closets, baths, gardens, and so on.

24,178. (*Chairman.*) All that is done for the collector; it is all put down on his collecting note, and he has only to go and ask for that money?—Yes, that may be so; but then you have so many more items, that you have to have so many more men to do it.

24,179. I do not see that. Those items all tot up to a total; and all the collector has to do at the same time he is asking for the poor rate, or whatever it may be, is to ask for the water rate?—The corporations, in their wisdom, collect their water rates separately. They must have very good reasons for it.

24,180. (*Mr. De Bock Porter.*) That is surely not the case with all?—I cannot call to mind a single corporation—I am speaking of large corporations—that collects its water rates along with its borough or district rate.

24,181. (*Sir John Dorington.*) Where the gas is supplied by the corporation, what happens?—There is quite a different set of collectors.

24,182. Separate from the water rate again?—Quite separate; a separate staff entirely.

24,183. In fact, one is managed as a trading business, and the other as a tax?—Both the gas and the water are managed as trading businesses.

24,184. Yes, the gas and water are both managed as a trading arrangement, and the other as a tax?—

Quite so. I think there is another reason. If you take a demand note to the house, with the whole of the rates lumped on together, it looks such a big sum that people do not like it. But if you go four times a year for your water, and only twice a year for your district rate, it is much easier for the people to pay. There is a very great deal in that in country towns.

24,185. (*Mr. Pember.*) The water rate is collected quarterly, is it?—Yes, in most country towns.

24,186. (*Chairman.*) Not in London?—Not in London. In London, for convenience—I am speaking of my own company, I know most about that—it is collected half-yearly.

(*Mr. Pope.*) I think all collect half-yearly.

24,187. (*Mr. Mellor.*) Do you think the people like the collector calling four times instead of two?—Yes, I do. I think most people would prefer to pay a small amount four times a year than a large amount twice a year.

24,188. There would be no difficulty, of course, in arranging the whole of the rates, so that the collector might call four times a year if the ratepayer preferred it?—There would be no difficulty about that.

24,189. (*Chairman.*) It would cost more in collection?—Yes, it would cost more in collection.

24,190. Four visits would cost more than two?—The great disturbing things are the extras in connexion with the water collection.

24,191. (*Mr. De Bock Porter.*) Some corporations have no extras, have they?—Nearly all have.

24,192. Take Manchester—

(*Mr. Pope.*) They are collected separately in Manchester.

(*Witness.*) And I think in Manchester they have extras for baths and extra for water-closets.

24,193. (*Mr. Pope.*) I think the rate is collected separately in Manchester?—Yes, it is.

24,194. (*Chairman.*) Do you know what is done in Birmingham; do they collect separately in Birmingham?—Yes.

24,195. (*Mr. Lewis.*) Is the collector the same individual as the man who examines into the condition of the meter and inspects it?—No, there is always a separate staff of meter examiners and meter readers precisely as a gas company has a staff of meter readers.

24,196. (*Mr. De Bock Porter.*) Might not the collectors who collect the District Rate be employed to collect the Water Rate, if they are not collecting it at the same time?—No, they would not do that, because they appoint just as many district rate collectors as can get round the district twice a year, or once a year, or as many times as that corporation has collections; and all their other time is filled up in entering up their books, making out receipts, and so on.

24,197. (*Mr. Pope.*) Clerical work?—Yes.

24,198. (*Major-General Scott.*) These provincial undertakings are administered, are they not, by water committees selected from among the councillors, and so on?—Yes, in some cases. For instance, at Nottingham and Blackburn, and a few other towns which I have been connected with, a water committee is appointed. If it be a joint board, like the Accrington or Chesterfield, or one or two others, then the joint board is composed of members delegated by their respective councils or urban district councils.

24,199. And what is your opinion as to the average capacity of these gentlemen for the management of waterworks?—I had some of the ablest men in Lancashire on my water committee at Blackburn, and at Nottingham they also have some of the ablest men in the town; but on a large committee, naturally, there are great differences. Some are the very reverse of being able. But I must say that on my committee at Blackburn four or five members were members who had huge businesses of their own—some of them employing a couple of thousand men, and they paid considerable attention to their work. The committee only met once a month.

24,200. (*Mr. Mellor.*) That is the case with the directors, is it not; some are able men, and some are not; is not that your experience?—Yes, there are always differences. I do find this, that with municipalities, the meetings are very seldom, and there is

a very small time allotted to the committees compared to the time directors give. My directors give ten times as much time to it as did my water committee at Blackburn.

24,201. Then the interference of a water committee who devote so little time to the management would be less than the interference of a board of directors?—Yes, it is done in this way. Any little dispute goes through their legal adviser—the town clerk; and the instructions are invariably these: “There are the Acts of Parliament: carry them out, make no concessions to anyone; whatever goes wrong, or whatever dispute there is, carry it out strictly according to the law, and do not bother the committee.”

24,202. (*Chairman.*) Do directors allow the law to be infringed?—I found when I came from a municipality to my directors that they made a great many concessions which my water committee at Blackburn would never have dreamt of doing. For instance, in the case of a burst pipe where the supply was through a meter, when the quarter's water bill went in it would be a very high water bill. My directors have an appeal committee every week. This gentleman would attend before them, and he would pull a very long face and explain why and wherefore his pipes had burst, or why the leakage was, and they used to let him off one half of it.

24,203. Are your shareholders aware of that?—I should think so. The directors are all shareholders. If he made out a good case, they always considered it.

(*Sir George Bruce.*) You cannot consult shareholders about everything.

24,204. (*Major-General Scott.*) And in the case of a water committee, what would happen?—The man would have to pay his full rate.

24,205. (*Mr. Mellor.*) The water committee are all representative men?—They are.

24,206. That is to say, they have all constituents amongst the ratepayers?—Yes.

24,207. And you found the water committee were stricter than the board of directors?—Yes.

24,208. (*Sir John Dorington.*) It is a much less elastic management. They are more bound by law than a board of directors?—Quite so.

24,209. (*Mr. De Bock Porter.*) Did you find any disposition on the part of municipalities to pay undue wages to the employees?—In my time all those questions had not arisen as they have now.

24,210. (*Mr. Mellor.*) You had employers on the municipality of your town surely?—We had a great many contractors on that municipality, and if the corporation raised their employees' wages it would reflect upon the contractors as well. At that time—that is a good number of years ago—they kept the wages just the same as the wages of similar classes of men employed outside.

24,211. (*Major-General Scott.*) At that time the contractors were at the top?—Yes.

24,212. Now, perhaps, it is otherwise?—I think the workmen are at the top now.

24,213. (*Mr. Mellor.*) I do not quite understand you. Do you suggest that corporations pay excessive wages?—No, I do not.

24,214. Then, as I understand you, they pay no more than reasonable wages?—I cannot say what they pay now. In my time, when I was a municipal engineer, they used to pay the reasonable rate that was obtaining in the town for any similar class of work to what their own employés were executing.

24,215. What do they do now?—I do not know.

(*Mr. Mellor.*) Then if you do not know, the probability is that they continue the system.

(*Sir George Bruce.*) Things have changed frightfully since then.

(*Mr. Pember.*) What somebody called the “hydrant” headed socialism has arisen since then.

24,216. (*Mr. Lewis.*) I suppose really what you mean is that the members of the council are, as a rule, engaged in manufacturing industries employing a very large number of men, and if they were to encourage high rates of wages in connexion with municipal affairs, they might have to meet a demand for an increase in connexion with their own works?—That is so, and on some councils they have not that high class

of men, and where they have a great many of the labour members on, the conditions are somewhat different.

24,217. (*Mr. Mellor.*) You spoke of Nottingham. Is that so at Nottingham?—It is so long since I was their permanent official that all these labour questions had not arisen in those days. My more recent experience as the borough water engineer of Blackburn was that they simply paid the ordinary rate in the town.

24,218. That is to say, although they were hard upon the ratepayers, as you suggest, in one way, they did not pay excessive wages?—No, they did not pay excessive wages.

24,219. (*Mr. De Bock Porter.*) You have no reason to suppose that they have changed their policy?—I have not.

24,220. (*Chairman.*) I gather the result of all you have said is you think management would not be cheaper if the companies were purchased?—It would not in my opinion.

24,221. Do you think that there would be any other gain to the consumer?—I think if the whole of the concerns were in the hands of one authority that there might be saving upon capital account in executing new works.

24,222. (*Major-General Scott.*) How would that be?—I will take, for instance, the position of my own company on the River Lea; we may eventually have to go to the Thames for more water. That will necessitate a conduit 25 miles long across the south of London probably, as I do not think we can find a suitable route north. The cost of that conduit would be enormous. If the companies nearer to their sources of supply were to pass it on, it would be cheaper. I will give another instance. Suppose, for instance, instead of our first going to the Thames we had the 22 millions a day from the New River and the New River had 22 millions a day extra from the Thames, that would save a very large sum in capital outlay at once, because the westerly part of their district is so much nearer to the Thames than the East London. That is what I meant when I said that the companies nearer the sources of supply should take those supplies.

24,223. (*Chairman.*) Can you explain why your company did not join in the Staines Reservoirs Scheme?—No, I cannot for the moment. It was very carefully considered at the time, but I cannot recollect all the reasons set forth why we did not.

24,224. (*Sir John Dorington.*) Did you advise them on the matter?—Yes.

24,225. (*Chairman.*) It would have been an advantage, would it not, to the East London if they had had a share of that supply?—It would. One of the great difficulties, if I recollect, was the conveying of it to the East London. The difficulties are enormous to get through on the north side of the Thames to East London from Staines.

24,226. (*Mr. Mellor.*) That is, I suppose, with an independent main?—With an independent main, certainly.

24,227. (*Chairman.*) In fact, if the companies had been amalgamated, you might have saved, at any rate the 1,000,000*l.* which it cost to take the Staines Reservoirs water to the New River Company?—No, I could not go so far as that, but amalgamation, of course, would save something in constructing conduits to a company like the East London furthest away from Staines. Naturally it must save a lot.

24,228. There was a very expensive conduit even to the New River Company?—Yes.

24,229. 1,000,000*l.* we were told?—I do not know the exact figures.

24,230. (*Major-General Scott.*) If you had had a conjoint scheme with the New River Company, could not it have been done more economically. I mean to say, a duplicate supply might have been delivered, part to the New River and part to the East London?—That is very probable.

(*Chairman.*) Have you anything to say about division among the different local authorities around London; I do not think anybody has suggested that the sources of supply should be divided.

(*Mr. Pope.*) The County Council suggest it in their Bill this session.

(*Chairman.*) Not between the urban and rural districts?

Mr. W. B. Bryan.

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Mr. W. B. (Mr. Freeman.) No.

Bryan. (Mr. Pope.) My friend, Mr. Freeman, has not read his own Bill. The County Council does, I assure him.

31 Jan. '99 (Mr. Littler.) Every one of them.

(Mr. Pope.) There is a provision in their Bill that every one of these local authorities shall be entitled to share in the distribution of the water supply of London and buy its own share of the pipes.

(Mr. Freeman.) I assure you you are wrong, Mr. Pope.

(Mr. Pember.) It is no use saying we are right or wrong. Look at the Bill.

24,231. (Chairman.) We have nothing to do with the Bill of this year, and I confess I do not see the bearing of it. (To the witness.) Do you conceive it to be practicable to split up the sources of supply and the means of distribution between the different metropolitan counties—between the counties of London, Middlesex, Surrey, Kent, Essex, and Hertfordshire?—It appears to me quite impracticable.

24,232. Can you tell us shortly why? I do not want to go into all the details of it, as we have had a great deal of evidence on the subject already?—It is most difficult to do it shortly, but it seems to me to be self-evident.

24,233. Can you give us any idea what it would cost?—No, I cannot.

24,234. (Mr. De Bock Porter.) A very large sum?—A very large sum.

24,235. (Chairman.) Can you give us the population of your district inside and outside the county of London?—In the middle of last year there were 760,000 within the county of London and 538,000 out. Since then, there has been a considerable addition to the population, which it may not be worth while entering into.

24,236. Since when, do you say?—I got out those figures in the middle of last year.

24,237. On what data do you say there has been an increase since the middle of last year?—The new houses that have been erected in the district supplied by the East London Company and which we supply.

24,238. Can you give the population now?—Yes, I can give it to you now.

24,239. In the county of London, how much?—777,000.

24,240. And outside?—534,000.

24,241. That is less than it was in the middle of last year?—That is so, and for this reason. West Ham was very much over-estimated, I find, and we have had a count of the supplies.

24,242. Why have you given us incorrect figures; it is really wasting time?—The Registrar-General has got 40,000 more than I have, and the Registrar-General is a very long way wrong. We have had a count of the houses and estimated it.

24,243. On the figures you have just given us, it appears that since the middle of last year the county of London has increased considerably, whereas upon the estimate your outside district has diminished in population?—According to these figures, it is so. But the matter arises in this way. There was a new census of London for the Equalisation of Rates Bill. I got a copy of that census, and I found that in London there had been an increase of something like 10,000 in the population. In addition to that, Hackney had increased from houses we had put on, making it now 777,000.

24,244. That does not bear out your statement that the increase you looked for in your district was in the outside of the county of London and not inside?—The increase is almost entirely outside.

24,245. It is not so upon these figures?—That is simply due to the county borough of West Ham being over-estimated before.

24,246. What ought it to have been in the middle of last year instead of 538,000?—We say it ought to be about 242,000.

24,247. Instead of 538,000?—No, instead of 260,000.

24,248. How much should your total be altered by?—

(Mr. Pember.) 18,000.

(Witness.) It should be brought down to 534,000 outside London.

24,249. (Chairman.) Very well then. The outside of London has remained exactly the same?—But the estimates of last year were evidently wrong.

(Mr. Pember.) It would bring it down to 520,000 roughly. The difference between 242,000 and 260,000 is 18,000, and you take the 18 off the 524.

(Witness.) Some of the others have increased very much.

24,250. (Chairman.) Then there has been no increase on your now corrected figures that you have given us—at least there has been no increase in the outside district?—In the outside district on these figures, no.

26,251. Whereas there has been an increase of 17,000 upon 760,000 in London proper?—Yes.

24,252. Then that does not bear out your theory that it is your outside district that is the increasing part of your area of supply?—No; but it could be easily explained in this way. The error is due entirely to the over-estimation of West Ham.

24,253. We have corrected the figures for West Ham, and they come out now exactly the same as they were in the middle of last year; it is 534,000 in both cases?—No.

(Mr. Pember.) If you take off the difference of West Ham, 242,000 from 260,000, you would take 18 off 538, which makes 520.

24,254. (Chairman.) Why did you tell me just now that in the middle of last year the figures ought to have been 534,000?—The last figures I gave you were from an actual count of supplies made for the purpose of this Commission.

24,255. What is your corrected figure for the middle of last year?—I cannot give you the corrected figure for the middle of last year, but I can give it you for December. We had a count made specially by your orders, and I am giving you now the population up to date, 777,000 instead of 534,000 outside.

24,256. Why cannot you give me what ought to have been the figure of the outside district at the time the county of London had only got 760,000 people?—Because at that time the population were estimated from the Registrar-General's Returns. Since then we have had an actual count of the houses.

24,257. You have now found out that the Registrar-General's Returns were mistaken?—Quite so.

24,258. By how much?—By the figures I have just given you.

24,259. You told me that in the middle of last year the right figure was 534,000 for the outside district?—The figure that I gave you for the middle of last year was 538,000 for the outside.

24,260. But I have done with that, and I want now to get the right figure for that date?—I cannot give it to you for that date; I can give it to you for December.

24,261. (Sir John Dorington.) The fact is from your figures we can draw no conclusions as regards the increase of population?—I can give you some figures that will—

24,262. Answer my question. From the figures on your proof and the figures that you have just now supplied we can draw no conclusions as to the increase of population—

(Mr. Pember.) The probable increase.

(Witness.) Yes, you can, because the two together show 13,000 increase. We have laid on in the 12 months in the outside district 5175 new houses.

(Sir John Dorington.) Those are fresh figures altogether.

(Chairman.) Yes.

(Witness.) There is nothing so complicated as getting populations correct, my Lord.

24,263. (Chairman.) Why do you profess to do it?—We have had an actual count.

(Chairman.) I do not want to go into it; but you invite me into a path and then tell me that every step is full of mistakes.

24,264. (Mr. Lewis.) Was 760,000 a correct number for London in the middle of last year?—No, it has not increased since the middle of last year.

24,265. (Chairman.) Then all your figures are wrong both inside and outside London?—The figures I have

just given you are correct now from the count of the houses.

(Chairman.) They are not worth having.

24,266. (Sir John Dorington.) They are not capable of being compared with anything that you can rely upon for the middle of last year?—No, they are not.

(Mr. Pember.) But he was going to say, "I have got some figures which will justify my reason for saying that the increase comes outside."

24,267. (Chairman.) Give us your figures now that you will not have to correct?—We have laid on new houses in the outside district in the 12 months ending 31st December—5175.

24,268. How many have you laid on inside the county of London?—I have not got those, but very few.

24,269. Very few tells us nothing. Is it hundreds or thousands?—I cannot give it to you, because there have been so many houses pulled down for railway purposes in London.

24,270. There, again, you cannot give us any figures that contrast the inside and outside districts?—I have just given you the figures that contrast in December.

(Chairman.) No, you have not. You have only given us one limb of the comparison and not the other.

(Mr. Pember.) He gave you 777 against 534.

(Chairman.) 534 is all wrong.

24,271. (Sir George Bruce.) I suppose there is no room for expansion inside, is there?—There is no room for expansion except a small part of Hackney—a very small area—left.

24,272. Therefore the increase is outside necessarily?—Yes.

24,273. (Chairman.) When the inside is filled up, that may be so; but it is not filled up yet?—It is within a few acres.

(Chairman.) A few acres will take a good many thousand people.

(Mr. Pember.) In the main, I think, common sense is better than figures; and the great space for extension is outside.

(Chairman.) Then why does he put it upon figures instead of standing on common sense?

(Witness.) I went to the best authorities for the population, and if they err I cannot help it.

(Chairman.) Then we will pass from it.

(Mr. Pember.) There is one thing which I am afraid by an interruption I prevented Mr. Bryan from going on with. Some time ago you were asking him about the differential rate in London as between the various companies, and he was just beginning to give you some reasons why it would be very difficult to assimilate all those.

24,274. (Chairman.) If you have anything to say about that, pray, say it, and let us get on?—I think I had better not answer the question.

24,275. Now with regard to the future, have you made any estimate of what your requirements will be in the future?—Yes, I will hand in the letters of the Company on the subject.

(The witness handed in Estimates. See Appendix Q, 3.)

24,276. Thank you?—I assume that at the beginning of 1937 the population to be supplied will be 2,472,100.

24,277. How do you get that estimate of population?—By increasing it decennially by 18·2 per cent.

24,278. From what figure?—From the population in 1896 of 1,232,107.

24,279. (Sir George Bruce.) How did you get the population in 1896; 1891 was the census year?—1891 was the census year. We corrected all our figures from the census. Then year by year we add, according to the number of houses we have laid on, the average number of persons per house in the previous decade.

(Sir George Bruce.) That is an approximation.

24,280. (Mr. Mellor.) What do you take as the average per house?—It varies in every parish, and I took that from the census tables, and every parish that had a house laid on I increased it by the same number of persons per house as the average of the previous decade.

24,281. (Mr. Mellor.) What is that number?—It varies from 5 up to 11.

24,282. (Chairman.) How many did you take at 5, and how many at 11?—I took the parish of Loughton at a little over 5; Chingford, 5·3; West Ham, 6·2. Poplar would be about the same.

24,283. Why that difference between Poplar and Chingford?—I cannot tell you, my Lord. There the people are.

24,284. (Major-General Scott.) If you divide the population by the number of supplies, what figure does that give you?—Throughout the whole district?

24,285. Yes, throughout the district. Is it about 6·62?—6·62.

24,286. (Chairman.) What is 6·62?—The average per house throughout the whole of the company's district.

24,287. As you have adopted the figure of 18·2 decennial increase, why do not you start from a fixed census figure, and then go on?—I have done so. I have taken the fixed census figure for every parish separately.

24,288. Have you then applied to each of those figures the decennial increase of 18·2?—Yes.

24,289. Then what does it signify about all these different decimals and figures you have been giving us about people per house?—Someone asked me the question, I do not know who it was. But I took the population in 1896 at 1,232,000, and I have increased it all over by the 18·2 decennially up to the year 1937.

24,290. That is a calculation totally independent of how many people there may be per house in Poplar and in Chingford, and in those other places that you mentioned?—Absolutely. But I was asked this question: The last census being 1891, how did I get the population in 1896; and I explained how I had got the population of 1896, as the initial figure to start from, and that is the only way to get it.

24,291. Can you tell us whether your figure that you started from in 1896, namely 1,232,107, is more or less than you would have got if you had started from the census population of 1891, and then put on the decennial increase of 18·2?—

(Mr. Pember.) Suppose you had carried that out to 1937 instead of taking the intermediate year.

(Chairman.) No, I want to start at 1896.

(Mr. Pope.) If he started with a census figure?

(Chairman.) Yes, if he started with a census figure instead of this figure that you have got at by some mysterious method that I do not understand, about different decimals for every parish in the district.

(Witness.) I cannot tell you what it was in 1891. I have not it here.

24,292. Then you say that you estimate that the population that you will have to supply in 1937 is how much?—2,472,100.

24,293. At 35 gallons per head, that will require how much water?—86,523,000 gallons a day.

24,294. How do you propose to get supplies to meet that number of people?—From the Lea and storage reservoirs 30 million gallons, from the Thames under our present powers, 10 million gallons; from wells existing, and to be constructed, 20 million gallons; from gravel springs at Hanworth, 2 million gallons; and additional from the Thames, 25 million gallons, making a total of 87 million gallons.

24,295. Are you in possession of the site of the land where those gravel springs at Hanworth are supposed to exist?—In possession of the land, and the water also.

24,296. You get nothing from it now?—Yes, we pump that 2 million gallons a day regularly.

24,297. How near are those gravel springs to the river?—About two miles away, and the level of them is 13 feet above the river.

24,298. And, of course, the additional 25 million gallons a day from the Thames must be got from Parliament, if you can?—Certainly.

24,299. (Mr. De Bock Porter.) What is the estimated cost of those works?—3,470,000l.

24,300. May I ask you a question with reference to a letter which your secretary wrote to us on the 31st January 1898, where it was stated that the company's engineer estimated that to obtain the necessary additional quantity of water would cost approximately

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Mr. W. B. Bryan. 4,238,000l. ?—That was due to taking, instead of 18·2 as the decennial increase, a much higher figure than that.

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24,301. (*Chairman.*) 25·8, I think ?—Yes.

(*Mr. De Bock Porter.*) Have you varied it because your experience shows that the smaller number is correct ?

24,302. (*Chairman.*) No, it is the Balfour Commission figure. (*To the witness.*) Has not your experience shown you that the Balfour Commission figure errs, if at all, on the side of excess ?

(*Mr. Pember.*) Yes.

(*Witness.*) I do not know that.

24,303. (*Chairman.*) You might have tested it, if you had tried, to see what the decennial increase at the rate of 18·2 from 1891 to 1899 had been, and if you had seen what the actual population was, then you would have seen whether that rate of increase had been maintained, but you preferred to remain in a region of theory ?—No, I have not remained in a region of theory as regards our population, because I have made a count of the houses.

24,304. (*Sir John Dorington.*) That justifies the 18·2 per cent., does it ?—Yes, the 18·2.

24,305. (*Chairman.*) You do not know that the least in the world, because you have not made the calculation of what the other would come to ?—I am only speaking so far as my company's district is concerned.

24,306. But so far as your own company's district is concerned, you have not made the necessary calculation ?—Up to now I know the 18·2 is justified.

24,307. You have not calculated it. You cannot tell me what the 18·2 would come to if you applied it to the census population of 1891 ?

24,308. (*Major-General Scott.*) The decennial increase adopted by Lord Balfour's Commission was 18·2 for the whole water area ?—Yes, for the whole water area.

24,309. (*Mr. De Bock Porter.*) But it was 25·8 for your water area ?—Yes, it was.

See
24,391—
443.

24,310. How, then, can you justify the alteration from 25·8 to 18·2—

(*Chairman.*) I do not think that figure must be assumed. Where is it ?

(*Mr. De Bock Porter.*) It is stated in the letter I referred to.

24,311. (*Major-General Scott.*) The decennial figure of increase for some companies must be more than 18·2 and some less, I presume ?—That is so, certainly.

See
22,331.

24,312. I think yours is the second statement we have had as to the decennial increase ; I think the New River Company was the other, and the New River was considerably less than 18·2 ?—Yes, that was so.

24,313. (*Chairman.*) Where shall we find in the Balfour Commission Report that they estimated 25·8 as the decennial increase in your district ?—It is not there.

(*Sir George Bruce.*) I do not think it is there.

(*Mr. De Bock Porter.*) Then the statement of your secretary is incorrect.

24,314. (*Chairman.*) Yes, it is quite a mistake. Your secretary has assumed that the right figure was 25·8 ?—Yes, that was so at the time. There was a good deal of discussion about it, I know, at the time.

24,315. Really, this putting before us of papers which are full of inaccuracies, is hardly consistent with fairness to the Commission. You are wasting our time in a lamentable way ?—I think, in justice to myself, I ought to explain that the figures I sent in in July last, giving the populations, are really within 1 or 2 per cent. of what the real figures have come out at.

24,316. You might have supplied us with the correct figures. However, as I understand you, you have not calculated what a decennial increase of 18·2 upon the census population of 1891 would give in 1899 ?—No, I have not.

24,317. Then you cannot say whether or not the actual figures of the population show that the decennial increase has been less or more than that ?—No, I cannot say.

(*Mr. Pember.*) Mr. Crookenden, the Secretary of the Company, tells me that the reason he took the 25·8 was this : He found that was the rate of increase of this

particular district between 1881 and 1891 ; but he finds that since that the decennial increase, so far as he can judge from the uncompleted decade, has fallen down to 17.

(*Chairman.*) I do not know where he gets that figure from.

24,318. (*Chairman to Witness.*) Then you say, assuming that all your items are maintainable and maintained, and you get 25 additional million gallons a day from the Thames, you will just be able to supply your population in 1937 ?—Yes.

24,319. You could not go on until 1941, I suppose ?—No.

24,320. (*Mr. De Bock Porter.*) Your rough estimate of cost is 3½ millions ?—Yes, roughly, 3,470,000l.

(*Mr. Pember.*) You will observe, my Lord, that that 25 million which he proposes in that list to get from the Thames, if multiplied by eight, would only make an average of 200 millions to be obtained for all the eight companies by the Thames ; and we know by that time they would be getting between 300 and 400 millions. So that there is room for his getting more if he wants it.

24,321. (*Chairman.*) Of course, 1937 is rather a near date. You cannot give us at all what you would want in 1940 or 1950 ?—Probably about eight million gallons a day more in about five years later. In 1942, I think your question was, my Lord ?

24,322. I will take 1942 ?—Probably about five or six millions a day more.

24,323. Then you would have to look to the Thames for that ?—Certainly.

(*Mr. Pember.*) That would make him take about one-tenth of the 300 million gallons, and, of course, Kent will never want any, I suppose ?

24,324. (*Chairman.*) Does your estimate of 3,470,000l. for that supply up to 1937, suppose that you are independent of all the other companies and get your supply yourself ?—It does.

24,325. If there could be interchange, so to speak, of supplies between the different companies, would you save money ; could you do it for less ?—Probably we could.

24,326. Your water from the Thames will have to come all across South London under the Thames, and so up into your district ?—Yes.

24,327. Whereas, the New River Company could get supplies from the Thames much more cheaply and more readily ?—They could.

24,328. And if you and they were partners, so to speak, in the matter, they could get their water from the Thames, and let more water come down the Lea for you ?—Yes.

24,329. However, you would be driven to the Thames for something. You could only hope for 22½ millions from the New River Company from the Lea ?—Yes, that is so.

24,330. Therefore, you would want something from the Thames ?—We should want some help from the Thames in some way or another.

24,331. If you are to get help from the Thames, it is almost as costly to get three million gallons a day as 20 million gallons a day ?—We should get the other by interchange from the south of the Thames from the Southwark and Vauxhall.

24,332. I think all your tables have been put in, have they not—your statements about the works of the company, and so on ?—Yes, they have all been put in.

Cross-examined by Mr. FREEMAN.

24,333. I want to ask you a question about the supply which you have to send down the Lea for navigation. The statutory figure, of course, is 5,400,000 gallons ?—Yes.

24,334. During last year, what proportion of that statutory quantity did you send down ?—They took what they wanted. We do not send it down. They are the takers before we get our water, and that lies entirely within their power, and not with us.

24,335. May I take it that you have no means of answering the question as to what amount was actually taken ?—No, I have not.

24,336. At any rate, the whole was not taken, because you had to pump a great deal, had you not?—In the lower reaches we did.

24,337. Can you tell me at all during the bad times, say, July and August, what rate you were pumping per day?—No, I cannot. They are centrifugal pumps. I would give you the figures if I could, but you cannot estimate from these. We kept the navigation up to its proper level, and then when it was at its proper level the pumping ceased.

24,338. Was there a considerable amount of complaint as to the navigation during last summer?—Not to my knowledge.

24,339. There had been for years past complaints, had there not, that owing to the quantity you were taking there was not sufficient left for the navigation?—No.

(Chairman.) Complaints by whom, Mr. Freeman?

(Mr. Freeman.) By the traders, my Lord.

(Chairman.) To whom?

(Mr. Freeman.) To the Lea Navigation, and from the Navigation to this company.

(Chairman.) We should have the Lea Conservancy here to prove that.

24,340. (Mr. Freeman.) Do you remember, before Lord Balfour's Commission, a statement was put in by the Lea Conservancy, containing a letter which they addressed to you?—I remember a letter, but I cannot give you the particulars of it.

24,341. It was Appendix, page 117. Do you remember, in that statement which was put in, this passage occurring:—"The effect of the yearly increasing quantity of water taken by the companies has been a difficulty in keeping the navigation below Old Ford up to the proper head—especially at times of neap tides—and a great deal more dredging has to be done at very great expense, to enable the traffic to be passed. This state of things has been very marked for some time (three years past) and particularly lately in the Limehouse Cut, where the navigation has been entirely stopped at times for want of sufficient water. The remedy for this is, either for the Conservators to pass down their full statutory daily quantity, or to again deepen the cut by dredging. The latter expedient is almost out of the question, as the funds at the disposal of the Board are insufficient to meet the cost, which would be about 1,200%, but before resorting to the former the Conservators, who are fully alive to the great importance of it to the companies, are desirous of ascertaining whether they will come forward and meet the difficulty. The traders are demanding that whenever the water is below head, the Conservators shall fulfil their duty and take the full quantity allowed by the Act, until the river is up to the proper level. This would mean passing down about 4,000,000 more (and further, if necessary) than at present taken, and this extra water, after being used for the navigation would only be turned into the Thames, and entirely lost to the companies. In addition to the traffic question, it is frequently urged against the Conservancy that there being so much less water flowing through the lower reaches than formerly the sewage discharged into the river is not properly flushed away, and therefore a great nuisance is created, especially in the summer time. To pass down the 'navigation' quantity of 5,400,000 gallons daily would, therefore, appear to be the proper course to pursue under all the circumstances, but looking to the interests of the companies and water consumers, the Conservators are of opinion that it is but fair that the companies should have an opportunity of expressing their views on the question before any decided step is taken." Do you recollect that?—Yes.

24,342. That was put in before Lord Balfour's Commission, was it not?—Yes.

24,343. And was a letter signed by the Secretary to the Lea Conservancy, Mr. George Corble.

(Mr. Pember.) Was there any answer to it?

(Mr. Freeman.) Yes, there was an answer to it. Do you want it read?

(Mr. Pember.) Yes.

24,344. (Mr. Freeman.) "I am requested by my directors to state that they have taken into careful

consideration your letter of the 17th instant, with respect to the amount of water used by the Conservancy Board for the purposes of the navigation. My directors fully admit the right of the Conservancy Board to the quantities reserved to the trustees by the Lea Water Act, 1855, and they do not propose to ask the Conservancy Board to diminish the volume of water to which they are entitled for the purposes of the navigation. My directors, however, do not agree that the passing down of the statutory quantity for the lower reach would abate the evils complained of as regards the Limehouse Cut, the amount of water being minute in comparison to the volume in the tidal portion of the river. They would point out that frequent floods have occurred of late, and that the quantity passing the company's works at the Lea Bridge has exceeded 200 million gallons daily, and that if such a great body of water continuing for several days, will not affect the flushing of the Limehouse Cut, the quantity alluded to in your letter is not likely to answer the desired object." That was the answer sent, was it not?—Yes.

24,345. Now, I want to pass to another matter.

(Mr. Pember.) Before you pass away from that, Mr. Rider Cook, the Chairman of the Lea Conservancy gave evidence on July 10th, 1894 in connexion with the Company's Bill, and in your examination of him you put this question to Mr. Cook: "You are proposing to take a great deal of water out of the Lea. I am showing that you take out too much now? (Witness.) There have been complaints made that owing to the quantity of water taken by the water companies, the Limehouse Cut, which is a portion of the Lea within the metropolis, has been in a foul condition, but those complaints have been made from want of knowledge. The condition of the Limehouse Cut is not due to water taken by the companies, but to the peculiar engineering construction of the Limehouse Cut."

(Mr. Freeman.) At that time for whom was Mr. Cook giving evidence?

(Witness.) He was giving evidence for the Conservancy, I believe, was he not? No; for us. The Conservancy always would appear on our Bills as having a right to protective clauses.

24,346. (Chairman.) How can the construction of Limehouse Cut foul the water in it?—The Limehouse Cut is the canalized Old Ford Lock, the surplus waters of the River Lea do not run into the Limehouse Cut, but they run down the old channels and get away without flushing the Limehouse Cut. At Old Ford there is a big storm overflow from the London County Council sewer, and every time a lot of rain comes, out come the storm waters into the Limehouse Cut.

24,347. Then it is the London County Council that is fouling the Limehouse Cut?—Yes, I lived on that Cut for nine years, and I have seen that storm overflow.

24,348. (Mr. Freeman.) That is hardly a reason?—I have seen the storm overflow disgorging scores of times into this Cut.

24,349. Therefore, the fact remains that whatever may have been said by Mr. Rider Cook, a letter was addressed to you by the secretary of the Navigation, apparently under the orders of the Navigation?—Yes.

(Mr. Pember.) What was the year of that letter, Mr. Freeman? I noticed it was the 17th March, but I have forgotten the year.

(Mr. Freeman.) 1891.

(Mr. Pember.) Because I see the engineer of the Lea Conservancy reported in 1893 and said this, "All the River Lea Water that can or could get into the Limehouse Cut must go down the Bow River, and that is filled with water of the same quality as the Thames and in the same state of pollution, except at times when it is worse by reason of the sewage brought in by the London sewer storm water out-lets below Old Ford."

(Mr. Freeman.) That was the gentleman who appeared as a witness of the water companies.

(Mr. Pember.) No, that is Mr. Childs, engineer of the Lea Conservancy.

(Mr. Freeman.) In a double capacity.

(Mr. Pember.) Siamese Twins.

Mr. W. B. Bryan.

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Mr. W. B. Bryan. 24,350. (*Mr. Freeman.*) Now let us turn to another matter. If I correctly understood your evidence, the fault you find, and the only fault you find, with the diagrams of Sir Alexander Binnie is that they have not taken into account certain water that comes in below the points at which they are taken?—Yes.

24,351. Can you tell me at all, during the dry weather of last year, what quantity of water was coming in from those streams?—No, I cannot.

24,352. Am I correct in saying that it was a very minute quantity?—It was a small quantity. I do not think it would exceed one million gallons a day.

24,353. That is rather an outside view of it, is it not, in the dry weather?—No, I should think probably it would be about that.

24,354. There are several small streams which send in a good deal in flood time, but very little in the drier weather, is not that so?—Yes, the company's intercepting cut sends in the most.

(*Chairman.*) The whole difference between Sir Alexander Binnie and this gentleman is only the difference between 5,000 and 5,221 million gallons storage?

(*Mr. Pember.*) That is all.

(*Witness.*) That is about all.

24,355. (*Mr. Freeman.*) As regards that 5,000 or 5,221 million gallons storage, does that make any provision for the increase of population?—Yes.

24,356. Or is it on the assumption that it is the same population, and you have got to make up deficiencies?—No, it is to provide for the increase of population, along with the estimates I have just laid before the Commission up to 1937. You will see in that I have provided for 30 millions from the Lea.

24,357. Now you gave us in respect of the pumping of your wells certain figures, and you said the largest you had pumped up at the present time was 11 million gallons?—Yes.

24,358. Can you tell me, was that for one day or for any lengthened period?—That extended over some weeks.

24,359. I have here before me the figures for 1898, taken from the Water Examiner's Monthly Returns, and I see the highest for any month there was 9,637,000?—Yes, that is due, as I have before explained, to certain stoppages for repairs of pumps.

24,360. So that there was no month where it reached anything like the figure of 11 millions?—Not the whole month.

24,361. And that varied from two millions, or from 1,692,000 in April up to the 9,637,000, you have just mentioned?—Yes.

24,362. Now you were asked a question as to providing for the drought which came in last year. I think in 1897 you, in your Bill, introduced a clause for enabling you to exchange with other companies, did you not?—Yes.

24,363. And you pointed out that after your experience in recent years, it was necessary that you should have such a power?—Yes.

24,364. And you got the power?—Yes, we did.

24,365. I think you got it in the same shape that you asked for it, did not you?—No, I do not think we did.

24,366. Practically the same?

(*Mr. Pember.*) No.

24,367. (*Mr. Freeman.*) How soon after you got that power did you first put it into use?—The New River began to supply us with water on the 26th July.

24,368. 1898?—1898.

24,369. Can you tell me when you, having got this power, I suppose somewhere about July or August 1897, first took any steps to put it into effect?—We began to take steps as soon as we considered that it would be necessary to get more water in case the drought was prolonged.

(*Mr. Pember.*) As a matter of fact, my Lord, it is worth noting at this stage—because that is just what Mr. Bryan said—that as soon as he saw the emergency arising, he then set to work to do it. The clause, as we introduced it, was not as Mr. Freeman said, practically the same as the clause in the shape in which it was passed. It was a general clause allowing interchange, but it was reduced as it passed through

Parliament after the opposition of the London County Council to a clause which gave us power to get the interchange in case of emergency only, and then after giving notice to the Local Government Board.

24,370. (*Mr. Freeman.*) Can you give me the date when you first took any step?—No, I cannot give you the date, but it was sometime in the summer of 1898.

24,371. Now, you were asked a question also in respect of the economy which might be effected if you had taken water in common with some other companies, instead of having to do it all separately. It is the fact, is it not, that along the Bayswater Road you have a main running?—Yes.

24,372. Is it also the fact that for a very great distance indeed there is a main of another company exactly alongside yours?—I believe that is so.

24,373. The Grand Junction, is it not?—Yes.

24,374. And is it also the fact that when you come into Oxford Street there is a third main belonging to the West Middlesex Water Company running alongside yours?—I believe that is so, but I cannot say positively.

24,375. Can you tell me at all for how many miles your main and the Grand Junction main run side by side?—I should think some of the mains of the Grand Junction run side by side with ours all the way from Kew up to Oxford Street.

24,376. That would be somewhere about eight miles?—Possibly eight miles.

24,377. Up to the Edgware Road?—Yes.

Cross-examined by Lord ROBERT CECIL.

(*Lord Robert Cecil.*) There are only a very few questions. I do not know whether your Lordship would allow me to ask them now?

(*Chairman.*) Yes, certainly; but we indulged you largely, Lord Robert, with Mr. Middleton, and you must please remember we have nothing to do with the depletion of Hertfordshire wells.

24,378. (*Lord Robert Cecil.*) Very well, my Lord, I will confine myself strictly to what I understand to be before your Lordship. (*To the witness.*) Could you just give me a few facts about three of your wells? You have got a well at Lea Bridge, I think?—Yes.

24,379. And one at Walthamstow and one at Old Ford?—No, we have not one at Old Ford.

24,380. It is in construction, is it?—In construction.

24,381. Then I will leave out the one at Old Ford. Can you tell me the height of the surface of the ground above Ordnance datum at that time of those two, or could you give it to us if you cannot tell me now?—I can give it to you. At Lea Bridge it is about 22 feet above Ordnance datum.

24,382. And at Walthamstow?—At Walthamstow it is about 30 feet.

24,383. Can you tell me what the rest-level of these two wells is?—No, I cannot. There is a difficulty about that. When you are pumping it is impossible to get the rest-level.

24,384. Of course. I rather understood you had often ceased for three days?—Yes, we have for three days.

24,385. Does not that give you the rest-level?—No, not much of a rest-level in three days. The rest-level at the Copper Mills, at Walthamstow, that is in June 1897, for about two months was approximately 30 feet below Ordnance datum.

24,386. And what was it at Lea Bridge, approximately—I do not want it more than approximately?—At Lea Bridge, at the same time, it was about six feet below Ordnance datum.

24,387. Now, there is only one other question I need ask you. You said that in making one of your wells you were drowned out?—Yes.

24,388. What conclusion do you draw from that?—That it is worth while to put down more pumping machinery to get more water.

24,389. That the chalk there is full of water; is that your conclusion?—No, my conclusion is that it is worth while to put down more pumping machinery and go on tunnelling in that direction.

24,390. In that well there is a large supply of water?
—Yes.

(Lord Robert Cecil.) Now, I restrain myself in obedience to your Lordship's invitation, but there are other questions.

(Chairman.) But however interesting your subjects are, you know what the reference to us is.

(Lord Robert Cecil.) I am entirely in the hands of the Commission about that.

(Chairman.) We really have nothing to do with deciding whether or not the New River Company and the East London Company are injuring wells and springs in Hertfordshire; it may be they are; it may be not.

(Lord Robert Cecil.) The evidence can only be indirectly of value as showing that that source of supply is not one that they can rely upon in the future.

(Chairman.) That depends upon Parliament and not upon us. If Parliament chooses to allow the Hertfordshire wells and springs to be depleted—

(Lord Robert Cecil.) But I say if we are right it is a supply that has already been drawn upon more than the supplies from the heavens warrant, and therefore it is coming to an end. That is the only way it can be material to your Lordship's inquiry.

(Mr. Pember.) No estimate of the water resources of London suggests that we should take a drop more water from Hertfordshire than we have a right to take now.

(Chairman.) I must say I cannot understand why Hertfordshire does not arrange with the New River Company to be taken out of its district. It has a trumpery number of supplies.

(Lord Robert Cecil.) So far as the number of supplies are concerned it would be easy; but both the New River Company and the East London Company, as I understand, contemplate drawing a larger quantity of water from the wells in the chalk.

(Mr. Pember.) Forty is the amount suggested by the Royal Commission.

(Lord Robert Cecil.) Forty, yes; but the Royal Commission, we think, was wrong. However, if your Lordship thinks it is not material, I will not put any question.

(Chairman.) I appeal to you, Lord Robert, is it?

(Lord Robert Cecil.) Yes, I think it is material up to that point. If your Lordship tells me that the Commission are going to take care to safeguard the interests of Hertfordshire, then I do not think it is worth while.

(Chairman.) We have nothing to do with the interests of Hertfordshire; you must take care of yourselves.

(Lord Robert Cecil.) It is very material to Hertfordshire, and it is also material to the supply of water to London.

(Chairman.) We are not inquiring into the supply of water to London, but into the expediency of transferring the supply of water to London from the companies to a purchaser.

(Lord Robert Cecil.) That is true; but I understood a considerable quantity of evidence had been directed to show that the Thames either was or was not an available and desirable source of supply. If that is true, I should have thought it was equally material to show that the wells in the chalk were or were not available and desirable sources of supply. But I am entirely in your Lordship's hands, if you think it is immaterial.

(Chairman.) Your point is not that the water is not there in the wells to be got, but that it ought not to be got because it will hurt somebody else.

(Lord Robert Cecil.) My point is that we can show it is hurting somebody else, and at any rate we can show that they are taking more water out of the chalk

than is going into it. That is the point as far as it is material.

(Chairman.) That is not so with Mr. Bryan's wells. He has been drowned out.

(Lord Robert Cecil.) That does not at all show that he is not, in fact, drawing on his capital.

(Chairman.) If the interval between Saturday afternoon and Sunday morning is enough to drown out his wells, his capital must be a long way from being affected.

(Lord Robert Cecil.) According to our theories it is exactly what we should expect. If the water was flowing rapidly in from Hertfordshire, and flowing slowly out under the clay, you would find where you sunk a well an immense rush of water at hydraulic pressure; it would be an artesian well up to a point, and that is exactly what we expected. It proves nothing against our theory; it is rather in our favour that there should be a great pressure of water in these wells.

(Chairman.) This happened after pumping with their whole power for months?

(Lord Robert Cecil.) I do not suppose they had pumped for months.

(Chairman.) Then your artesian well waited to make its rush until they stopped pumping.

(Lord Robert Cecil.) No, went on rushing all the time, but when they stopped pumping, of course it overcame them. However, if your Lordship thinks it is not material, I will not put any questions upon it.

24,390a. (Mr. Claude Baggallay.) In answer to questions of Lord Robert Cecil to Mr. Middleton, Mr. Middleton promised a return of the number of wells the levels of which were not affected by pumping when these wells were close to rivers. I have got a table printed, and here it is. It was in answer to Questions 18,691 and 18,692.

(Sir John Dorington.) I remember the question.

(Mr. Claude Baggallay.) Two questions were asked, and the return was promised. They are the complement really of Mr. Middleton's answers to Lord Robert Cecil's questions. It would be quite sufficient if they are put in.

(Chairman.) Lord Robert asked the questions, and I think you should make your communication to Lord Robert. We do not feel any interest in the matter at all.

(Mr. Claude Baggallay.) Of course they only supplement the answers given there, but if your Lordship would rather they did not go upon the notes, well and good.

(Chairman.) I do not see the necessity of that at all, but if Lord Robert wants them let him see them.

(Mr. Claude Baggallay.) There is a good deal of reading in it, Lord Robert. It is a longer list, I think, than you anticipated.

(Chairman.) We must appeal to the companies in the first place not to require us to hear three witnesses from each company, and to endeavour to lay the figures before us in a final shape—not figures that have to be corrected the moment the note has been encumbered with them. It is wasting a great deal of time. Therefore, if the other companies will try and let one witness put in all the statements they desire to lay before us, that will be extremely convenient. With regard to the question Mr. Pope put to me about the order of counsel addressing us, I am quite willing to hear any observations you may have to make about it; but it seems to me to be the most convenient course to follow the order taken in the evidence.

(Mr. Pope.) I think so. I think if my learned friend Mr. Balfour Browne were to precede us, and Lord Robert were then to follow, we should deal more shortly with the case we have to submit.

Mr. W. N. Bryan.

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See 24,391.

[Adjourned till Monday next at 12 o'clock.]

FORTY-NINTH DAY.

6 Feb. '99

Monday, February 6th 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
 Sir JOHN EDWARD DORINGTON, Bart., M.P.
 Sir GEORGE BARCLAY BRUCE, Kt., C.E.
 ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COUCEY SCOTT, R.E.
 HENRY WILLIAM CRIPPS, Esq., Q.C.
 ROBERT LEWIS, Esq.

OSCAR OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
 Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
 Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

See
 24,308-17.

24,391. (*Mr. Pember.*) My Lord, I should like to put Mr. Crookenden, the Secretary of the East London Company, into the box, just to put in one or two formal documents, and also that your Lordship may ask him any questions your Lordship may wish to. But before he goes into the box, may I venture to call your attention for one moment to something that occurred last Tuesday? I think there was some slight misunderstanding between the Commission and Mr. Bryan as to the rates of increase which Mr. Bryan had taken for the East London Company. May I say that Mr. Bryan thought, and we all thought, that the Commission, in looking at this question of the future needs of London would have taken the matter, so to speak, *en bloc*, and that they would have adopted the figure of 18·2 for the whole of the area, and not have sought to split the matter up as between the various companies so as to consider what the particular contributory amount of increase in population would be of each company to make up the common 18·2. It is perfectly true that the contributory amount of increase in population which the Balfour Commission suggested for the East London was 25·8. It is also perfectly true that that formed a constituent in the general 18·2 for the whole of London. There was a further estimate, I think of 13· something which the East London Company themselves submitted to the Balfour Commission. That you see gives three estimates of increase of population and of consequent need. Now on the 21st of January, 1898, on this topic, at the suggestion of the Commission we sent a letter to the Commission which has been put in and which recalls all this very well. It is not long, and perhaps you will bear with me if I read the letter, and that will put it quite clear to your Lordship, as Mr. Bryan desired to put it. Would your Lordship mind my doing that?

(*Chairman.*) No.

(*Mr. Pember.*) Then I will. The letter is dated January 21st, 1898, and is as follows:—"East London Water Works Company, Office, 15A, St. Helen's Place, E.C., 21st January 1898. Sir,—My directors have had under consideration your letter of the 29th November 1897, stating that the Commissioners

"are desirous of framing a forecast of the future growth of capital expenditure in the case of the undertaking of each of the Metropolitan water companies, in the event of such undertakings not being acquired, limiting the inquiry to a term of about 40 years, i.e., to the end of 1937, such forecast to be based upon the conclusions of the Royal Commission on the Metropolitan water supply presided over by Lord Balfour of Burleigh, and stating that the Commissioners would be glad to receive from the directors of this Company any information upon the subject, which they are in a position to supply, and any expression of their views which they may think it desirable to make. I am instructed to state that, should the population increase in this Company's district at the same ratio as suggested by Lord Balfour's Commission, namely, 25·8 decennially"—I think it ought be 6—"The number in 1937 will be 3,165,445, and that to supply such a population at the rate of 35 gallons per head per day would require 110,790,000 gallons a day. The Company's engineer estimates that to obtain the necessary additional quantity of water would cost approximately (including the half million of capital granted under the East London Water Act of 1897) 4,238,000l. This expenditure would be gradual and made in stages as the circumstances of the case might require." There, you see, they deal with the 25·6 or 25·8, as the case may be. Then the letter proceeds:—"My directors have had this forecast made so as to comply literally with the request expressed in your letter, but they feel bound to call the attention of the Commissioners to the extreme improbability (indeed, in their view, the impossibility) of there being any such increase of population and consequent demand for water. Their reason for this view is that the percentage of estimated increase of population adopted by Lord Balfour's Commission was based upon the tables of increase between the years 1881 and 1891, averaging 25·8, but the Commissioners expressed considerable doubt whether that ratio of increase was likely to continue in the future, and that such doubt was well founded is borne out by the fact that the average increase from 1886 to 1896 has been 17·1 per cent. only."

See
 24,275.

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(Major-General Scott.) How has that increase been discovered and calculated?

(Mr. Pember.) Some of my people will kindly bear that question in mind and get it answered for you when I have finished the letter, but, personally, I cannot tell you:—"and there is every reason to believe that it will in the future still further decrease. The available building acreage throughout has sensibly diminished, and within the county of London is now practically covered, and the present population of 760,000 there is not likely to increase." Then he goes on to emphasise this by saying:—"Between 1881 and 1891, the Victoria and Albert Docks were constructed, and the adjoining district of West Ham and East Ham increased abnormally, principally upon that account. West Ham has now a population of over a quarter of a million, and the available area for building is now very small, so that, looking for all practical purposes into the future, my directors are strongly of opinion that the estimate of their engineer as to the needs of the Company's district as laid before Lord Balfour's Commission will not be far exceeded. In other words, that the Company will then have to supply a population of 1,736,000 in 1937, which at 35 gallons per head per day means a daily supply of 60,760,000 gallons. Should this estimate prove correct, then the additional capital, including the half million granted under the Company's Act of 1897, should not exceed 1,250,000L." Now will you forgive me for just interpolating there one word, and that is this. That second estimate which I have mentioned there of 60,760,000 gallons and a cost of 1,250,000L, with a population of 1½ millions is based upon the estimate which the Company laid before the Commission, probably proving, in the long run, correct. There is an intermediate estimate which the Commission took of 18·2 for the whole of London, which was the estimate which Mr. Bryan took the other day when he gave you as an estimate a certain amount of population needing a daily supply of 87 million gallons. So that you have got three estimates: The 25·6, in which we do not believe, which was the increase between 1881 and 1891, caused abnormally by the opening of those docks and the great increase of West Ham, and so on, and which we say has been falsified by subsequent facts as a factor to be gone upon. Then you have got the second, 18·2, which refers to the whole of London; and the third, 13 something, I think it is, which was what we laid before the Commission in 1892, and which we believe will ultimately be the correct one; 110 million gallons would be our supply if the 25·6 were proved to be correct; 87 if 18·2 be taken; 60 if 13 something, I think it was, be taken.

(Chairman.) Do you mean 13 or 17?

(Mr. Pember.) No, 13 was what we laid before the Balfour Commission. We say between 1886 and 1896 17·1 has ruled instead of the 25·8 as between 1881 and 1891. That 17·1 we do not think will be the final reduction. We think that the final reduction may safely be taken at the figure which we put before Lord Balfour, which I tell you, although I have not got it in my hand at the present moment, I believe to be 13 something. The 17·1, my Lord, you may discard from your mind, because it was only—

(Chairman.) Where do you find the figure of 25·8? I cannot find it in the Report of the Balfour Commission.

(Mr. Pember.) 18·2 was the aggregate amount, or rather the average amount, of increase which Lord Balfour took for all the companies. That was made up, of course, of certain constituents, some of which would be below 18, and some of which would be above. We will say that the first eight letters of the alphabet—

(Chairman.) Yes, but where did you get the 25·8 from, if you will just help me to that?

(Mr. Pember.) I am told, as a matter of fact, you will find that in the Report.

(Chairman.) No; I have looked for it in vain.

(Mr. Pember.) I can easily understand it, my Lord, because, after all, the 18·2 was a calculation arrived at after hearing such evidence as they thought fit to take on the matter, and I am told that they did take, as a matter of fact, as the constituent—and perhaps Sir George Bruce can help us there; I do not know whether he can—

(Sir George Bruce.) I do not remember it.

(Mr. Pember.) I am told they did take, for the East London Company, between 1881 and 1891, an increase of 25·8.

(Chairman.) I do not know where you get that from, I cannot find it.

(Mr. Pember.) And I am puzzled also. I am told Mr. Crookenden can tell you how that 25·8 is arrived at. Then the letter proceeds:—"My directors beg to point out that although the Commissioners have requested the companies to make the forecast individually as above, the terms of Lord Balfour's Report deals with the estimated population in 1931 and the water available as a whole, and shows that there will be at that period 420 million gallons of water available within the area of supply, which is sufficient for 12 millions of people. My directors would also point out that should these aggregate figures be realised, a re-adjustment of sources of supply, of works, and of distribution, would tend to economy in capital outlay. I am, sir, your obedient servant, I. A. Crookenden, Secretary. Cecil Owen, Esq., Secretary, Royal Commission on Water Supply (London), 19, Spring Gardens, S.W." That, therefore, is all I have to say, and I will just, if you please, put Mr. Crookenden into the box. But, first of all, Major-General Scott asked me how we arrived at the figure 17·1 as the figure of increase from 1886 to 1896. We took the corrected population between 1881 and 1891.

(Major-General Scott.) What do you call the corrected population?

(Mr. Pember.) I suppose corrected to the new figures that you adopted.

(Major-General Scott.) That I adopted? The number of population supplied has nothing to do with the census population.

(Mr. Pember.) I am wrong. What he means by corrected population was this: They make estimates of the population up to the census independently for themselves.

(Major-General Scott.) Excuse me for the moment. Do you mean by a house to house visitation?

(Mr. Pember.) Yes, the number of houses.

(Major-General Scott.) Only the number?

(Mr. Pember.) The number of houses, and then they multiply those

(Chairman.) The number of houses supplied?

(Mr. Pember.) Yes.

(Mr. Balfour Browne.) Yes, the number of houses, just as they did in Lord Balfour's Report.

(Mr. Pember.) They do that. Say they do that from 1886 to 1891. The census then comes out, and they find that they have to make certain corrections. They make those; then, that being done, they get at the increase in the number of houses they supply from 1886 to 1891, and the inmates in them, and they make a similar calculation from 1891 to 1896, taking the number of new houses added since the earlier date and multiplying the number of houses by the number of inmates which they think it right to take it at—it may be 5·2 or 10·2, according to the locality and the habits of the population—and so they get at the fact that the increase has dropped, at all events from 1886 to 1896, to 17·1.

(Mr. Balfour Browne.) I say it is the same method which the Balfour Commission reported. "It soon became apparent, however, from the evidence given to us, that the number of separate supplies was not equivalent to the number of houses supplied, and that the method of computation adopted was somewhat illusory."

(Sir George Bruce.) And, therefore, the Balfour Commission followed rather the information got from the Registrar-General's office than they did the estimates given by the companies.

(Chairman.) Will you allow me to ask where you get that figure 25·8 from? It does not appear anywhere in the Balfour Commission proceedings. Where do you get it from?

(Mr. Pember.) Of course, I am a mere conduit pipe to tell you what I am told. Now, I have got the 27th Annual Report as to Metropolitan Water Supply of the Local Government Board, which is for 1897-98. On page 208, I find for the East London that the

Feb. 99 average daily supply in 1831 was 34,543 gallons, I then find that in 1891 it was 41,583 gallons. Now, heaven forbid that I should say that I have done the arithmetic, or that I appreciate it, but I assume that the difference between these amounts is 25·8.

(*Mr. Crookenden.*) The population.

(*Mr. Pember.*) That is the average daily supply.

(*Mr. Crookenden.*) The difference in population.

(*Mr. Pember.*) Then if the same number are supplied, it ought to be again the same.

(*Mr. Balfour Browne.*) Had we not better wait until we get Mr. Crookenden in the witness box?

(*Mr. Pember.*) No; I am going to do what I can to assist the Commission. I daresay it is very lamely.

(*Mr. Balfour Browne.*) But we cannot cross-examine a conduit pipe.

(*Mr. Pember.*) No, you cannot cross-examine either me or the book from which I am reading. Now there is another column on that same page, average population, and the East London is given for 1881, 899,000, call it 900,000; it is given in 1891 as 1,131,000. Now I assume that I am right, and that the difference there is 25·8 per cent.

(*Mr. Crookenden.*) It is on that paper.

(*Major-General Scott.*) Let me at once point out that all these figures of population relate to the persons supplied with water, and have no necessary connexion with the census population of the same district.

(*Mr. Pember.*) Possibly not. I do not know how far this is really a substantial criticism or not. It is true that it is not the same thing as the census. But it is quite possible—and I should think most likely—that the supplies would increase rather more rapidly than the census did in proportion, because, I suppose, as the world goes on, more men out of 100 take water than took it before, and I should think, therefore, that for the purposes of the comparison of epoch with epoch it is likely that if the increase in supplies shows 25·8 that they would rather exceed than be under the increase in the general population, because I should think that the ratio of supply increases faster. Do you see what I mean?

(*Major-General Scott.*) Yes, I see, but the question is really on what argument should the Commission depart from the position it took up when the original letter was written in which the companies were requested to base their estimate on the report of Lord Balfour's Commission.

(*Mr. Pember.*) I did not ask them to. Only recollect this, that this difficulty has arisen not from any seeking of ours. We should have been contented to have taken the 18·2, but the Commission asked a year ago to have the future needs of the whole of London split up into eight—into these constituents.

(*Major-General Scott.*) You see it is necessary to apply to each company for an estimate of the outlay in their own district.

(*Mr. Pember.*) Quite so.

(*Major-General Scott.*) You can hardly ask the companies to communicate among themselves and present the Commission with a total.

(*Mr. Pember.*) No.

(*Major-General Scott.*) It is necessary to go to each company.

(*Mr. Pember.*) Yes.

(*Major-General Scott.*) And therefore each company must necessarily deal with its own population.

(*Mr. Pember.*) Yes.

(*Major-General Scott.*) And it was left, I suppose, to the companies to consider what Lord Balfour's Commission's Report meant and to take, what apparently has been taken, the particular decennial increase applicable to their own area.

(*Mr. Pember.*) They did it, and, as I understood, Mr. Bryan gave the evidence, namely, that on the basis of the 18·2 which Lord Balfour's Commission took, he would want 87 million gallons of water in 1937.

(*Major-General Scott.*) Yes, but the question is, what really did Lord Balfour's Commission take for that district of the East of London?

(*Mr. Pember.*) Then I do my best to assist you, and I say that the only figures that I know of existing anywhere are those figures in your 27th annual report, or

the equivalent figures of some years ago. The only figures that I know of that exist are those—the statistics of supply in 1891 and in 1891. I know of no other. I do not believe there are. I do not think that there are any statistics available by which the census of London is split up into the districts of the various water companies.

(*Major-General Scott.*) You know, when the New River Company was giving evidence on this subject, the Commission admitted a special decennial increase for the New River district on the plea that each district had a particular decennial increase which was used by Lord Balfour's Commission, and that although that particular increase of the New River was less than 18·2, no doubt the other companies would find that their decennial increase was more than 18·2.

(*Mr. Pember.*) Very likely.

(*Major-General Scott.*) And that the result would be a general average.

(*Mr. Pember.*) Quite so.

(*Major-General Scott.*) Amounting to 18·2.

(*Mr. Pember.*) Quite so.

(*Major-General Scott.*) And, therefore, to be consistent, inasmuch as that lower decennial increase was taken in the New River district, if a higher rate of decennial increase belongs to East London, we should take that.

(*Mr. Pember.*) Quite so, and you will not understand that I, for a moment, am venturing to do what would not be becoming in me to do.

(*Major-General Scott.*) Not at all. I am not putting it in that way in the least.

(*Mr. Pember.*) I am not, of course, blaming the Commission for any course they take leave to adopt: the only thing I am doing is to defend my witnesses and to defend my Company. We believe that the Balfour Commission took—we cannot conceive of their taking anything else, for there was nothing else in existence, as far as we know, to take—we shall be glad to know the figures if there are any, we believe that they have taken the increase in our average population supply from 1881 to 1891, which was 25·8. We suspect they must have taken that as our constituent to the average of 18·2. We suspect they must have done the same with all the other various eight companies. We cannot conceive anything else; because, as I say, there are no other figures they could take. Very well; but as we suspect that, and as we are asked to make a forecast of what our needs will be on the basis of Lord Balfour's Commission separately, we cannot do otherwise, in the first instance, than gratify the wishes of the Commission by saying—and that is what it comes to—if the Balfour Commission took 25·8 as our coming needs, then the total population in 1937 would be so much; the daily supply would be 110,700,000 and so much, and the cost would be four millions—about one-third. But we then think it right to defend our position by saying we do not believe that that will be the decennial increase, and the best means that we have of judging as to what it will be are, first of all, from the fact that as far as we can get it from 1886–1896 the decennial increase, judging from the same class of figures—

(*Chairman.*) What page are you reading from?

(*Mr. Pember.*) Page 208, of the 27th Annual Report of the Local Government Board. You will see the average population, Chelsea first, the middle column, and then the East London. Then we say, judging from what we know, as far as we can know from 1886–1896, the decennial increase has certainly not been more than 17, and we believe from other factors and information which we have got, that we were justified in the figure we originally put before the Commission, namely, 13 decimal something, which would work out to a consumption of 60 millions, and a cost of a million and a quarter. Otherwise, if we are to take the intermediate one, the 18·2, which we are quite willing to take, then our needs will be 87 millions, and our cost something between the 1,250,000 and the 4 millions.

(*Major-General Scott.*) I think we shall save time if we endeavour to obtain from Mr. Crookenden some statement as to how he arrives at the 25·8. I suggest that Mr. Crookenden might be asked that.

(*Mr. Balfour Browne.*) Before there is any evidence called I want to direct your attention to what you said, my Lord, on the last occasion, under Question 24,390a. You said, "With regard to the question Mr. Pope put

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"to me about the order of counsel addressing us, I am quite willing to hear any observations you have to make about it, but it seems to me to be the most convenient course to follow, the order taken by the evidence." Then Mr. Pope said, "I think so. I think if my learned friend, Mr. Balfour Browne, would precede us, and Lord Robert were then to follow, we should deal more shortly with the case we have to submit." My Lord, that is scarcely according to the ordinary order. I opened. I did not open by a speech; but I put in my evidence first. They have had full opportunity of answering that. The usual course, as nobody knows better than your Lordship, is that after that, they should say what their case is, and I should have the last word. I will show your Lordship by one illustration that that is only the fair way of doing it, because I find my learned friend, Mr. Pember, in re-examining Colonel Lockwood upon the very last occasion, said, "Now my learned friend says, can you suggest anything else than what you have suggested to justify the 10 per cent.?" I suppose you would hardly do me"—that is, Mr. Pember—"the injustice," would you, to say that it was not possible for me to suggest something more." Then Colonel Lockwood says, "I am, sure you would suggest a great deal more."

(Mr. Pember.) That is to an arbitrator.

(Mr. Balfour Browne.) I beg your pardon.

(Mr. Pember.) That was to an arbitrator.

(Mr. Balfour Browne.) We were discussing the matter here of the 10 per cent.

(Mr. Pember.) He was not—he was saying what an arbitrator would do.

(Mr. H. W. Cripps.) This is a very general question, it appears to me, and I think we ought to follow the precedent set by all courts in this matter, which has been adopted in a way to promote justice and the greatest expedition.

(Mr. Balfour Browne.) I think so.

(Mr. H. W. Cripps.) I hear nothing from Mr. Pember now that might not have been in his speech, but I quite understand that it would be fair to allow a summing up, as it were, of the other side, but that you would have the right to reply upon the whole case.

(Mr. Balfour Browne.) That is the ordinary rule, at any rate.

(Mr. Pember.) Surely not. This is not a question of proceedings *à nisi prius*. In the first place, I understood—after no argument of my own or of my learned friend, Mr. Pope—we simply asked you the question what would be the order—you gave your decision.

(Mr. Balfour Browne.) I beg your pardon. His Lordship distinctly did not give a decision, because he said he would be willing to hear what was to be said.

(Chairman.) Yes.

(Mr. Littler.) Will you allow me to say one word? This is not a case of somebody presenting a set of charges—at least, I never so understood it as being so. There is the case of the County Council. There are other cases of the water companies and of other persons. They are not in the least degree matters comparable to an action in which somebody presents a case on which other people comment and on which there is then a reply. Surely each case is a case in itself, which has to be presented probably in the light of the evidence that has been given and with such observations as are relevant to that case. I do not propose, so far as the Kent Company is concerned, to submit to you anything but what is relevant to my own particular propositions. I do not propose to reply upon the case of the County Council except in so far as any observations on their evidence apply to my evidence. Surely, the witnesses having been taken, it is more convenient to hear the counsel after all the evidence has been given, and surely the ordinary and proper course under those circumstances would be—and the way which would save time would be—

(Mr. Pember.) What your Lordship said to me on the first day was this:—You, the companies, are the persons attacked. You have got a right to hear everything—the witnesses and the speeches and everything else—to know what the attack is before you answer it.

(Mr. Littler.) I had not quite done. What I was propounding to the Commission was this, that surely all we need—

(Mr. H. W. Cripps.) All that we are upon at the present time is merely the order in which you are to be heard, which will be fair to everybody. Now, all the first part of the evidence was conducted by the officers of the London County Council, all the latter part of it has been conducted by the companies; and, therefore, as a matter of convenience in the order—we do not say you should not say anything you please—but merely the order should be that Mr. Balfour Browne should come last. That is all.

(Mr. Pember.) That may be your opinion sir. I hope it is not the opinion of your honourable colleagues.

(Mr. Littler.) That is exactly what I am most earnestly protesting against.

(Mr. H. W. Cripps.) One must be first and one must be last.

(Mr. Balfour Browne.) Only they want half-a-dozen lasts.

(Mr. Littler.) All that is wanted is not to deal with this, as if it were an action or even a case before a committee, but each of us presents his own individual case, with comments on such evidence as given which is applicable to that particular case, but not to deal with it as if there were a furious contest between the different parties on which you are to arrive at a conclusion, but with regard to each particular case, that case should be presented in its order; and, surely the natural order will be, that as the witnesses for the London County Council came first, their observations should come first, and then we should have an opportunity, each of us in our own turn, of making such observations as are necessary when those observations of the County Council are concluded. I certainly thought, my Lord, that this was settled. I thought the whole thing was settled and decided.

(Mr. Pember.) Your Lordship was asked before lunch, and at the end of the day came to this conclusion: "With regard to the question Mr. Pope put to me about the order of counsel addressing us, I am quite willing to hear any observations you have to make about it." Nobody did make any observations.

(Mr. Balfour Browne.) No, because I was not here.

(Mr. Pember.) But Mr. Freeman was here.

(Mr. Balfour Browne.) I am making them now.

(Chairman.) I do not think Mr. Balfour Browne was shut out.

(Mr. Balfour Browne.) Precisely.

(Chairman.) I wanted to hear whether anybody considered themselves aggrieved by the suggestion I threw out.

(Mr. Balfour Browne.) It was thrown out just at the end of the day. I was going to say first of all my learned friend Mr. Pember is entirely wrong in assuming that we have attacked the companies.

(Mr. Pember.) I did not say so.

(Mr. Balfour Browne.) You said you were attacked.

(Mr. Pember.) I beg your pardon.

(Mr. Balfour Browne.) I have made no attack upon the companies.

(Mr. Pember.) All the more reason you should not be last.

(Chairman.) You see this is not a case of plaintiff and defendant.

(Mr. Balfour Browne.) No, I know that.

(Chairman.) We have not yet heard any observations from the London County Council.

(Mr. Balfour Browne.) No, my Lord; we were quite prepared to tell you what our evidence was going to be, but your Lordship thought it better that nothing should be said then, and I thought even to the end there were to be no observations of counsel at all at any part of the proceedings. But if there are to be any, I would be absolutely beating the air until I know what the companies have got to say.

(Chairman.) You have heard all the evidence.

(Mr. Balfour Browne.) The ordinary course is the one that your Lordship knows. I put my case first: they have a full opportunity of answering it with evidence, and their duty is now to sum up and tell you what inferences you are to draw from that evidence; and I ought to have the last word. I do not want to say any more; you shall decide the matter.

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(*Mr. Pember.*) You will decide it.

(*Mr. Littler.*) We will not say anything more, but simply leave it to your Lordship to decide.

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24,566a.

(*Chairman.*) We will consider it and let you know what we think. It may be that you will drive us to the alternative of not hearing counsel at all.

(*Mr. Pember.*) I trust not, my Lord.

(*Mr. Balfour Browne.*) I assent to that, my Lord.

(*Mr. Pember.*) I daresay you do.

(*Mr. Balfour Browne.*) My learned friend, Mr. Pember, is bubbling over.

(*Mr. Littler.*) I am quite sure, my Lord, the speeches will be shortest by the course which I venture to suggest. However, I say no more about it.

(*Mr. Pember.*) I think if your Lordship will just tell us the order, we shall be quite content.

(*Lord Robert Cecil.*) I am not going to say anything about the order of counsel, but there is a point that I should just like your Lordship's ruling about, after the question of the order of counsel is disposed of. A point arises with reference to the conversation your Lordship was good enough to have with me at the end of the day.

(*Mr. Pember.*) Does my friend mind this point being decided first?

(*Chairman.*) We cannot decide it now. This court is so inconveniently arranged that we cannot consult here, we must consult when we retire.

(*Lord Robert Cecil.*) I refer to this, my Lord, simply to get the thing quite clear upon the note.

(*Chairman.*) What is the point?

(*Lord Robert Cecil.*) The point is this: Did your Lordship stop me from cross-examining Mr. Bryan or not? I ask this merely for the purpose of subsequent proceedings.

(*Chairman.*) I am sure that I only stopped you in cross-examining Mr. Bryan upon points that were irrelevant to our inquiry.

(*Lord Robert Cecil.*) If your Lordship will be good enough to say clearly that you think the cross-examination I proposed to address to Mr. Bryan was immaterial, I should rest satisfied. I do not want to press the matter at all.

(*Chairman.*) Just refer me to the place where you say I stopped you.

(*Lord Robert Cecil.*) Your Lordship stopped me at the very outset, it is under Question 24,377. Your Lordship will see there: "Yes, certainly, only, Lord Robert, we indulged you largely with Mr. Middleton, but you must please to remember we have nothing to do with the depletion of the Hertfordshire wells." Then, a little later on, I said to your Lordship, "How-ever, if your Lordship thinks it is not material, I will not put any questions." Then you say, "I appeal to you, Lord Robert, is it?" Then I answered to that submitting reasons why it is material. Then there is no very definite statement of what your Lordship's opinion is upon those reasons. But I said at the end, just before Mr. Claude Baggallay speaks, "However, if your Lordship thinks it is not material, I will not put any questions upon it." Your Lordship did not reply to me, but I certainly understood the Commission to take the view that the questions I proposed to put were not material. But when I came to read it on the notes, I do not know that it is perfectly plain. I should just like your Lordship's ruling, because if your Lordship thinks it is material, it will be my duty to ask your Lordship to allow me to cross-examine Mr. Bryan.

(*Chairman.*) Was the point there whether brackish water got back?

(*Lord Robert Cecil.*) With respect, that was not the point. That was a point on the cross-examination of

Mr. Francois. This was a question of whether it was material for me to go into the question of the underground water in the chalk at all; whether your Lordship thought it sufficiently material for me to cross-examine as to the general theory of underground water in the chalk. That was the point.

(*Chairman.*) What do you say upon it?

(*Lord Robert Cecil.*) If your Lordship says it is not sufficiently material, I am quite satisfied. Your Lordship will not misunderstand me. I do not wish to be persistent or importunate.

(*Chairman.*) We all think it is not material to our inquiry to decide whether or not the operations of these two companies are injuring the wells and springs in Hertfordshire.

(*Lord Robert Cecil.*) I am much obliged to your Lordship.

(*Chairman.*) Now, can we hear Mr. Crookenden at last?

(*Mr. Pember.*) I may say I have had these figures worked out, and the figures are a figure of 899,671 for East London population supplied in 1881, and a figure of 1,131,801 for 1891, being a difference of exactly 25·8 per cent.

(*Mr. Mellor.*) And it was in consequence of that that you suggested that the Balfour Commission took the figure of 25·8.

(*Mr. Pember.*) Yes.

(*Sir George Bruce.*) The Balfour Commission did not concern itself at all with the increase of the individual companies. All the Balfour Commission cared about was to know what would be the total population of London at a certain date, perfectly irrespective of what might be the claim that that would bring upon one company or upon another. We dealt with it simply as a whole.

(*Mr. Pember.*) I suppose the average figure of 18·2 must have been arrived at somehow.

(*Sir George Bruce.*) It was arrived at by the total population, not as dividing it up into individual companies.

(*Mr. Pember.*) Do not misunderstand me for one moment as wishing to go behind the back of the Balfour Commission. We were asked to give this letter particularising, and we did particularise to the best of our ability. It may be, we were wrong in supposing the Balfour Commission took that decennial increase of 1881 to 1891 of 25·8 as our constituent. If they did not take it, then we were wrong in that regard. We took it, but we give you our reasons in that letter for saying we do not believe it is a fair figure to take. That is all, my Lord.

(*Chairman.*) The Balfour Commission cannot have taken the figures you have just given from the Local Government Board Report, because they go down to 1897, and that is years after the Balfour Commission was sitting.

(*Mr. Pember.*) Although they came down to 1897, there are figures from 1881 to 1891; part of the column and the figure I took was the figure 899,671 for 1881 and 1,131,801 for the other year. However, I am quite content, my Lord, because it now turns out that the Balfour Commission did not take any such constituents. We, at your request, took the only figure that we could go to as showing what our constituent might be, and we have given you in that letter such reasons as we think for showing that would be very erroneous. We were content with the 18·2. That is what it comes to.

(*Chairman.*) The difference between the two figures for 1881 and 1891 is 232,130.

(*Mr. Pember.*) Yes, and that is an increase per cent. of 25·8.

Mr. ISAAC ADOLPHUS CROOKENDEN called and examined.

Mr. I. A.
Crookenden.

24,392. Mr. Crookenden, is that the way you obtained your 25·8?—That is so.

24,392a. That is, you took the Local Government Board figures from their Report, did you?—I did.

24,393. Are those figures of the total population or of the population supplied?—The total population.

(*Major-General Scott.*) Surely the heading is the population supplied?

(*Chairman.*) No, it is not.

(*Major-General Scott.*) There is no question that it means the population supplied, because it is derived from the companies' returns of the population supplied monthly.

(*Chairman.*) It does not so appear on the face of the table.

(*Major-General Scott.*) These tables are made out from the monthly returns of the companies, in which they return the population actually supplied in their several districts.

(*Mr. Balfour Browne.*) I do not know that it is very material, but Mr. Gomme had a table in which there was given (taken first from the census of 1896, which only covered London, and in other districts from calculations made in each of the districts) the population in the East London district and that was made out at 1,350,594, and the population actually supplied by the East London was made out to be 769,454. I do not think that table got on the notes.

(*Mr. Pember.*) Is it worth while going on with it any further? I think we all see the bearing of it now. We are quite content with the 182, and we should never have stirred from it if we had not been asked.

(*Major-General Scott.*) What we have to deal with is the population of "Water London."

(*Mr. Pember.*) Yes.

(*Mr. Balfour Browne.*) And if this table is accurate—I do not know that it is—the population in that area where they can supply is 1,350,000; the population actually supplied is only 769,000, just about half.

(*Sir John Dorington.*) Part of that population is in the area supplied by another company probably.

(*Mr. Balfour Browne.*) Some of it would be, of course, in the New River—237,000.

(*Chairman.*) And some of it—I do not know whether that is the case with the East London—supplied by other companies altogether.

(*Mr. Balfour Browne.*) I do not think this would apply, because this is all within the administrative county of London.

(*Sir John Dorington.*) Does it take the number of houses in the district which is supplied multiplied by the number of persons that the census shows live in houses in these respective districts.

(*Mr. Balfour Browne.*) I believe that is how it was done where the census was not applicable.

(*Sir John Dorington.*) Therefore the population supplied is the whole population within the district that is supplied.

(*Mr. Balfour Browne.*) No.

(*Sir John Dorington.*) Yes, the population supplied is the number of houses in the district that are supplied with water multiplied by the number of persons that the census shows live in that district when divided by the houses.

(*Mr. Balfour Browne.*) But there are hundreds of houses in the area that are not supplied with water at all.

(*Sir John Dorington.*) Then their population is added to the population of the houses that are supplied for the purpose of these figures.

(*Major-General Scott.*) No.

(*Mr. Balfour Browne.*) No; there was an actual census, you say, in London in 1896. So far as that is concerned, the population we take from the census. Outside, where there was no census, we have gone down and made calculations in the district as to the number of houses—not houses supplied—but the number of houses and then the number of people in them, and so arrived at the total population; and apparently only one-half of the population in the district of the East London is supplied with water (I speak roughly—it is 700,000) by the East London Company.

(*Mr. Mellor.*) I suppose a great many of them may come for a supply any day?

(*Mr. Balfour Browne.*) That is exactly it. My learned friend, Mr. Pember, does not seem to think it is going on in an increasing ratio. We think that large numbers would come upon them.

(*Major-General Scott.*) As regards each company, we want to deal with the agreed area of that company, meaning by the agreed area, the area which the company monopolises by agreements with other companies. Perhaps we had better deal with Mr. Crookenden.

(*Mr. Pember.*) You see it is very difficult to get any absolutely trustworthy result. Take, for instance, the population of East London and the East London District. A vast number of them come up into London during the day, and whether they drink only beer or

not I do not know; but if they consume water during the day, they consume it in London.

(*Mr. Balfour Browne.*) I have asked Mr. Bryan, and so far as the number supplied are concerned, he agrees with the figure I have given, but with regard to the number in the district, I do not suppose he has any information at all.

24,394. (*Chairman, to Witness.*) Can you tell us what proportion of the population in your district is not supplied by the company?—No; I have no means whatever of knowing that—nothing to suggest such a thing. May I just draw your Lordship's attention to table 2 appended to the return which was put in at question 23,890.

24,395. What return are you speaking of now?—The return of the East London Company as to works and supply.

24,396. (*Mr. De Bock Porter.*) It was put in at the last sitting?—Yes. The return shows, among other things, this. In table 2 there is a statement of the estimated average population for every year from 1881 to 1897, and if you take the difference between the average population in 1881—this is the population supplied—and the population in 1891, it works out, as the learned counsel has stated, to 25.8.

24,397. (*Chairman.*) Those are the same figures which the Local Government Board give?—Those are the figures sent to them. I can hardly reconcile the theory of it not being the corrected population. I do not know of any other basis.

24,398. General Scott points out that is not the total population, but the population supplied?—Such a thought never struck me. We have not considered it in any of our calculations or returns at all. The returns which we make are the houses supplied, and the population calculated upon the regular rate.

24,399. That is the basis of these figures that you have got in your own table?—That is so; I say that they are identical. I do not know where any point of difficulty comes in.

24,400. (*Sir John Dorington.*) Do you know what number of houses there are in your district supplied which are not included in the number that you supply?—I do not think there are any houses in our district that are not supplied with water.

24,401. You supply every house with water within the district where your pipes run?—I cannot conceive any houses not being supplied with water.

24,402. In that case the whole of the inhabitants in your district would be supplied?—Yes.

24,403. (*Major-General Scott.*) But in your district outside the Metropolis, are not there a number of areas which are not supplied?—I do not think so.

24,404. Are not there a number of places outside the Metropolis within your statutory area which are not piped and supplied with water?—The engineer says there may be a few detached farm houses, but very few indeed, hardly forming an element of calculation in any way of the slightest importance.

24,405. (*Sir John Dorington.*) Where does the difference arise between the 770,000 inhabitants who are supplied, and the 1,000,000 odd who are said to inhabit the district?—Which figures are those?

24,406. The figures which Mr. Balfour Browne has just mentioned?—Probably the greater part of the number are supplied by the New River Company.

24,407. In fact they are not within your area of supply?—No, not within our area of supply.

24,408. (*Major-General Scott.*) They are within your statutory area?—Yes.

24,409. But not within your agreed area?—Yes. That is another point.

24,410. Can you obtain, in any way, the population by the census in 1881 and 1891 of what I call your agreed area of supply, that is to say, the area that you have agreed to supply—that you have agreed with the New River Company to continue to supply?—No, I could not detach them. The numbers are included in this return, of course.

24,411. Could you, by searching the census returns, obtain the population of your agreed area?—Yes, I suppose we could do that. That was the return that was made, I think. That is included in our statement.

Mr. I. A. Crookenden. 24,412. (*Sir John Dorington.*) That is to say, the 770,000 people are the whole of the population of the agreed area?—Supplied by us, yes. It is impossible for one to say without a personal survey.

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(*Mr. Pember.*) But the census does not make a return coterminous with the boundaries of the water companies, and still less coterminous with the agreed districts between the water companies.

(*Mr. Balfour Browne.*) The census for 1896 gave it for each district.

24,413. (*Major-General Scott.*) You will get parish by parish in any area if they are whole parishes?—Quite so.

(*Sir George Bruce.*) What would be the use of it when we get at it? We want to arrive at the total.

(*Mr. Pember.*) So do I.

24,414. (*Major-General Scott.*) We want to arrive at the expenditure which will be incurred by the companies during the next 40 years, in supplying the population in their agreed area?—Yes. Does not this return of ours which shows the numbers of supplies and estimated population supplied, which I am going to put in, quite meet that for this year?

24,415. Can you get the census population of your agreed area in 1881 and 1891?—I think that would be the agreed area that we supplied in 1881 which we have already returned.

(*Mr. Pember.*) What the General means is, the agreed area where you do not supply. Is not that so, Sir?

(*Major-General Scott.*) What I mean is, there is a certain area that I call the agreed area.

(*Mr. Pember.*) Is that where the East London supply or do not?

(*Major-General Scott.*) It is where the East London supply, or have to supply, under the existing agreements. It is not coincident with this statutory area.

(*Mr. Pember.*) No, I understand that. The only thing I wanted to know was, whether you wanted the population of the area where they agreed not to supply, or the area where they do supply.

(*Chairman.*) The area where they do supply.

24,416. (*Major-General Scott.*) Where they do supply, and where, in the ordinary course, they will have to supply in the future. We want the census population of that area in 1881 and 1891, and to know the decennial increase in that interval of time?—Whether they are supplied with water or not?

24,417. Whether they are supplied with water or not, assuming that it would be your obligation to deal with them in the future?—Yes.

(*Mr. Pember.*) Those are the figures that I indicate cannot exist, because the census is not taken in that way.

(*Witness.*) There are no returns of that kind. I do not know whether it can be ascertained.

(*Mr. Balfour Browne.*) Yes; you can get it for parishes and also for wards, so that you can get almost the exact population within their area.

(*Major-General Scott.*) That is what we want to know.

(*Mr. Balfour Browne.*) We can lay it before you.

(*Witness.*) In a parish supplied by two companies, of course, the population is appropriated to each of them, according to the number of houses supplied; but that does not take in the point which you raise.

24,418. (*Major-General Scott.*) In the case of a parish which is split between two or more companies, you could divide that population in the ratio of the supplies actually at the present time existent?—Yes—if they are supplied; only, the point is to get those that are not supplied, as I understand. I do not know whether that could be done. It might be done.

24,419. Can you get it?—It might be done. I cannot conceive, at the moment, how it could be done, except by going to every house, and seeing whether they have a supply or not.

(*Mr. Pember.*) That leaves the question, my Lord, whether you will, in considering the needs of London and their comparison, go to Wales, or not go to Wales, or whether you will split up your districts in a way

like this, especially after the return you have made about coupling up.

(*Major-General Scott.*) It is not a question of splitting up the districts; it is a question of understanding what population any particular company has to supply between this time and 1937, and the capital which would be required to extend the supply to those people who are not already supplied.

(*Mr. Pember.*) Of course, I see your position; but I take leave to say that, after all, I do not think it is so very essential to any inquiry, and I will tell you why, because whatever the particular increase in any particular company's district may be—whether it is 15 or 25, say, that is got from the Thames, or from Staines—the future supply will be a common supply, and will be handed over to the various companies according to their several requirements, whatever they may be; so that if, we will say, out of an average increase of 18·2 per decade, a company like the East London wanted an amount which was in relation to that as 25·8 is, then they would get 25·8 as against 18·2, which would be their normal share of the amount of water collected at Staines, or wherever it is collected, that is all; and that they do by inter-coupling, or by any further arrangements of mains, and so on, that might be necessary for that purpose. Do you follow me?

(*Chairman.*) No.

(*Major-General Scott.*) I do not see how it applies to the case in point.

(*Mr. Pember.*) Suppose the East London increases at such a rate as would require a larger figure than 25·8, then it is clear their needs would be greater in proportion than 18·2 would show of the other seven companies.

(*Major-General Scott.*) If they only estimated it now for that decennial increase of population of 18·2, their estimate would be entirely wrong.

(*Mr. Pember.*) Supposing it is, then all I say is, that they will want more out of the common stock of water which they will have to pay for.

(*Mr. Balfour Browne.*) Suppose they are all wrong.

24,420. (*Chairman.*) Let us try and get what we can. As I understand, you have calculated that the decennial increase of the population supplied in your district is 25·8 in 10 years?—No, my Lord, that was the rate of increase between 1881 and 1891.

24,421. As I say, you have ascertained that the rate of increase between 1881 and 1891 in the population supplied in your district was 25·8?—Yes, upon that basis—in that decade.

24,422. The decennial increase of 25·8?—Yes, but it was qualified.

24,423. Now, assuming that decennial increase to continue in the future, I understand your calculation of the additional capital the East London Waterworks Company will want is 4,238,000l.?—I think that is the figure.

(*Mr. Pember.*) That is the figure.

24,424. (*Chairman.*) On the other hand, if the decennial increase of the population supplied in your district is 18·2 namely, the Balfour average, then the capital you will want to supply your needs up to 1937 is 3,165,445l.?—Yes, that is right.

24,425. I think these are the only two certain figures we can get in the present state of things.

(*Mr. Pember.*) If it goes down to the figure they put before the Balfour Commission, it will be still less, as I understand their report.

24,426. (*Chairman.*) Yes. (*To the Witness.*) Have you ascertained what has been the increase of population between 1891 and 1897 according to the figures given by the Local Government Board?—I have the return up to the end of the last year, if you will allow me to put it in that way. I do not think I have the other figures before me—this is one more year than your Lordship put, that is from 1891 to the end of 1898—the increase of population.

24,427. As per Local Government Board returns, do you mean?—No, this is taken out separately, at the request of the Commission, from our own books absolutely calculated.

24,428. Very good; that is the increase of population actually supplied?—Actually supplied.

24,429. It is how much?—179,495.

24,430. That is an increase of that amount upon a return of 1,131,800, which was the figure in 1891?—That is so.

24,431. What decennial increase does that amount to, per cent? If you have not calculated it you cannot possibly answer it off-hand?—It is 22·65, I have calculated it.

24,432. That is a decennial increase of 22·65 per cent., is it?—That would be so.

24,433. (Mr. De Bock Porter.) That is your actual experience?—That is our actual experience.

24,434. Instead of 18·2?—Instead of 18·2. But it is right to say there has been in the last 18 months or two years a tremendous increase in a certain part of Essex.

24,435. (Chairman.) Why should not that recur in future years?—We think that there will be scarcely room for such a tremendous increase as that. Land now is very rapidly being covered.

24,436. At any rate, those are the facts?—That is the fact.

24,437. 1881 to 1891 the rate of decennial increase is 25·8, and 1891 to 1898 the rate of decennial increase is 22·65?—Yes.

(Mr. Mellor.) Can you give me at all any notion of the increase in the last two years? Can you tell me how much per cent., or in any way you like? Perhaps you will give it to me presently. I do not want to stop your examination for it.

24,438. (Chairman.) At any rate, if I may have your attention for a moment, all the facts and figures ascertainable from the past show that the increase of your population in the East London district is higher than the average of 18·2?—It is since 1891.

24,439. No, from 1881 to 1898?—Yes, quite true.

24,440. During those 17 years you have been increasing at a higher rate than the Balfour average?—Yes.

24,441. Therefore, to take the Balfour average as the basis of what your future expenditure is likely to be does not seem to be very safe?—Except for the reason, as I say, that there is no land to put houses upon. We are bounded by the forest and a variety of circumstances. There has been a great influx of people, but it is not likely to continue at the same rate.

24,442. (Mr. Pember.) Has there been a great influx of the labouring classes into your district?—I think there has been into London most distinctly.

(Mr. Pember.) Would your Lordship forgive me for seeming to be persistent, but is not the long and the short of all this terrible discussion this, that the Balfour Commission took it in 1891 that there would be a decennial increase of 18·2 all over London. That decennial increase, if treated for the whole 30 or 40 years, would necessitate a certain increase of supply for the whole of London. Now you get, therefore, a common supply of water for the whole, and the question of whether one company wants 25 per cent. and another company, like the Chelsea Company, perhaps does not want 10 per cent. is all covered by this, that it really comes to nothing more than the company wanting the increase at the rate of 10 per cent. will only want that proportion of the common stock of water, the company increasing at the rate of 25 per cent. will want that relative amount, but the whole together will be enough to supply them all on the average of 18·2.

(Chairman.) Yes, it is very true, that taking them altogether, the inquiry is very immaterial, but looking at what the capital expenditure of each will have to be in the future, the inquiry is extremely material.

(Mr. Pember.) Yes, but it all follows the same thing—the capital expenditure of the company that does not want any will be nil.

(Mr. Balfour Browne.) We do not know of any company that will not want any.

24,443. (Chairman.) We will not discuss it any further, Mr. Pember. (To the witness.) I believe you have got some returns to put in?—Yes, I have.

24,444. First of all, there is your financial return?—Yes.

(Witness handed in Return, see Appendix Q. 4.)

(Mr. Balfour Browne.) Is this similar to the return that was put in by the New River Company?

(Chairman.) Yes.

(Mr. Balfour Browne.) They will be very valuable indeed.

24,445. (Chairman.) I see, roughly speaking, the annual dividend has decreased in the last three years?—Yes, it has.

24,446. (Mr. Lewis.) What was the dividend in 1898?—At the rate of 7 per cent.

24,447. (Mr. De Bock Porter.) Then it has gone back again?—Yes, it has fallen.

(Mr. Lewis.) What were your net profits in the same year, 1898?

24,448. (Chairman.) Could not these returns have been brought up to date?—I have not got the figures to the end of 1898 yet. I have the figures to Midsummer 1898, only.

24,449. (Mr. Lewis.) Your year closes at Midsummer, does it not?—No, the half-year. I have not got the figures to Christmas, 1898, yet. I am afraid there will be a great falling off in the profits.

24,450. (Chairman.) What were your profits to Midsummer, 1898? “A great falling off” tells us nothing?—90,182*l*.

24,451. (Mr. De Bock Porter.) Is that gross or net?—That is gross.

24,452. (Chairman.) You do not know what the net were, do you?—67,609*l*.

24,453. Are you sure—is that right?—Yes.

24,454. The net profits were 22,573*l*. less than the gross?—Yes.

24,455. Did you not say there was a great falling off?—I said there would be a great falling off to Christmas. The Honourable Member asked me as to Christmas.

24,456. (Mr. Pember.) The figures you have given are only to Midsummer?—Only to Midsummer.

24,457-9. (Mr. De Bock Porter.) What did you say the net profits to Midsummer were?—67,609*l*.

24,460-1. (Chairman.) Do you charge your expenses on the last half-year, some of them wholly, or are they evenly divided between the periods of six months—between each half of the year?—We charge the whole expenses to the half-year, and carry nothing over.

24,462. So that one may assume that the second half of 1898 will show about the same difference between gross and net profits?—No, not nearly so much.

24,463. Not so much, because you had more expenses?—Yes.

24,464. (Mr. Mellor.) Of course you do include in your expenses the cost of promoting Bills and opposing Bills in Parliament?—The whole of them.

24,465. Into what half-year do you bring those costs?—When they take place—in the second half-year, as a rule.

24,466. Are they in the figures up to Midsummer?—Any expenses that were paid were included in that.

24,467. Do you include them in the half year in which they are incurred, or in the half-year in which they are paid?—Usually we get the bills in very quickly for those charges. Nearly always the bills come in and are paid within the six months concerned. For instance, in connexion with the proceedings in the House for the half-year up to Christmas, the costs come in and are paid before Christmas. At any rate, they are taken into account, whether they are paid or not.

24,468. (Chairman.) You said just now that the dividend for 1898 was 7 per cent. Do you mean for the whole year or the half-year?—The half-year was at the rate of 7 per cent. per annum.

(Mr. Pember.) The first half.

24,469. (Mr. De Bock Porter.) The half to June?—The half to June was at the rate of 7 per cent. per annum.

24,470. (Chairman.) And do you know what the dividend will be in the half-year from June to December?—I do not quite like to say, but I do not think it will be any more.

24,471. Will it be less?—No; I think it will, perhaps, be the same.

Mr. I. A. Crooken-den.

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Mr. I. A.
Crookenden.
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24,472. (*Mr. Mellor.*) I want to understand this. Whenever you pay your full dividend, if you are paying your full dividend, then the cost of promoting and opposing Bills in Parliament will fall upon the consumer, will it not?

(*Mr. Pember.*) Not promoting. Promoting will go to the capital.

(*Witness.*) Promoting goes to capital. Bills that are opposed is a capital charge.

24,473. (*Mr. Mellor.*) Promoting is a capital charge?—Yes, if the Bill is passed; not if it is lost.

24,474. But supposing the Bill is not passed, then it comes into the expenses?—It comes into the expenses.

24,475. With regard to the opposing of Bills in Parliament, that comes into the expense fund always, does it not?—Yes, always.

24,476. The question I put was this: Supposing the full dividend is paid, that cost would fall upon the consumer?—Yes.

24,477. And if back dividends are paid ultimately, that cost will fall upon the consumer?—Yes, it will be included in the rate, of course. The rate will be so much less if it has not to be paid.

24,478. Then the cost of this Commission will ultimately fall upon the consumer, will it not?—I do not see where.

(*Mr. Pember.*) I think you may say that comes out of the pockets—

24,479. (*Mr. Mellor.*) I only want to follow this, Mr. Pember. I say, assuming you ultimately pay back dividends, then the cost of this Commission would fall upon the consumer, would it not?—I mean your cost?—Yes, if we were paying back dividends; certainly.

24,480. (*Chairman.*) If you had paid all your back dividends, and had reached your maximum dividend, then the cost would fall upon the consumer?—Yes.

24,481. As it is it does not fall upon the consumer unless the costs of this Commission equal what was wanting in your maximum dividend and your back dividend?—Yes.

24,482. (*Mr. Mellor.*) I should like to put one more question with regard to that matter. Supposing that that is so, namely, that this would ultimately fall upon the consumer, the consumer would have to pay double expenses, because he has to pay the cost of the County Council as well as the costs of the water company, has not he?

(*Chairman.*) Quâ ratepayer.

(*Mr. Pember.*) Quâ ratepayer.

(*Witness.*) As a ratepayer.

(*Mr. Mellor.*) Yes.

24,483. (*Mr. Lewis.*) I should like to ask a question about Return H. Is this the total amount of the authorised capital not raised at the present time?

(*Mr. Pember.*) Yes, it must be.

(*Witness.*) Yes, that is so.

24,484. (*Mr. Lewis.*) Then you have not applied for any further money powers except in your money Bill of this year?—We have money powers in the Bill of 1897.

24,485. In 1897, but that is included in this return?—Yes, that is included.

24,486. But since then, there is only the money Bill of this year, I understand?—Yes, that is so.

24,487. One million?—One million and a half.

24,488. Not one million?—No.

(*Mr. Pember.*) One million, the estimate for the reservoirs you are thinking of. The one million Mr. Bryan spoke about was the estimate for the reservoirs.

(*Mr. Lewis.*) 1,500,000l.

(*Mr. Pember.*) Yes.

24,489. (*Chairman.*) Have you prepared a return, showing the number of supplies, estimated population supplied, and the rateable value of the properties supplied by your Company?—Yes.

24,490. Will you kindly hand that in?—Certainly.

(*Witness handed in Return. See Appendix Q, 5.*)

24,491. This return brings out a different estimate of the population supplied in 1898?—I think it agrees

with the figures I have already given. As I said first of all, the figure is 1,311,296l.

24,492. Have you anything to say upon the subject of what the company has gained by the Quinquennial Assessments?—I simply desire to show that they are not so very profitable as has been supposed. In the Quinquennial Assessment of 1891, the rates were advanced in 32,438 cases and reduced in 31,921 cases. I will not trouble you with all the figures, but the net result to the company was an increased water rental of 1,597l.

24,493. Between 1891 and what?—That was the Quinquennial Valuation of 1891.

24,494. Between 1891 and—?—And the previous Quinquennial Valuation.

24,495. (*Mr. Pember.*) 1886?—Yes.

24,496. (*Chairman.*) Then in 1896 it is a little more?—The difference between the reductions and the increases amounted to 4,344l. per annum. I might state, just incidentally, in connexion with that, that that is about half of what the increase of our rates has been in that time. The increase of our rates between 1891 and 1896 is 8,656l.—our parish assessments. So that I mean it is not so very profitable a thing as is supposed.

24,497. (*Mr. Pember.*) Would that include, may I ask, houses that have been enlarged or rebuilt, and not merely an increase in the valuation of a house in 1891 as compared with 1886?—Certainly, it includes all the changes.

24,498. But it cannot include houses newly built?—No.

(*Mr. Pember.*) No, I said rebuilt or enlarged.

24,499. (*Chairman.*) It does not follow, therefore, that the whole of that 4,344l. profit between 1891 and 1896 is due to the supply of water to the same premises?

(*Mr. Pember.*) No.

(*Witness.*) No.

24,500. (*Chairman.*) Can you give us the figure for premises that have not been touched at all?—Yes, I have that.

24,501. Unaltered premises?—Yes. The rates of houses confirmed in 1896 were 60,765 in number, and in 1891 36,111, so that practically about two-thirds were unchanged in 1896, 32,000 were advanced, and 7,940 reduced in the assessment.

(*Mr. Pember.*) Is that money or houses?

24,502. (*Chairman.*) That is the number of houses, is it not?—That is the number.

24,503. (*Mr. Pember.*) And even that would not show you which were unchanged?—No, that is the statement all over.

24,504. (*Chairman.*) What I asked you was, if you would kindly give me your mind, whether you could give me any return of unaltered houses that show an increase of assessment by a raising of the quinquennial valuation or a reduction?—I beg your pardon; I thought your Lordship meant unaltered.

24,505. That is what I mean. Can you tell me that?—No, I cannot. I thought you meant unaltered by the assessment.

24,506. Then, as I understand you, both in 1891 and 1896, the increase that you got in your water rates does not equal the increase that you had to pay yourself in rates?—No, it amounted to about half.

Cross-examined by Mr. BALFOUR BROWNE.

24,507. First of all, with regard to the Census Returns, would you just take this into your hand, and look at the left-hand page. Do you see there that each of the parishes in the county of London is set down in the first left-hand column, do you follow that?—Yes.

24,508. Aldgate, Bethnal Green, Bow, Bromley, and so on—all in your district?—Yes.

24,509. Then, if you look at column No. 4, you find the total population in each of those parishes?—Yes.

24,510. Now I will just take one—"Aldgate (part of)"—in your district there is a population of 2,995, and of those you supply 1,692?—Yes.

(*Mr. Pember.*) Would you mind telling us what you are reading from?

24,511. (*Mr. Balfour Browne.*) It is a table proposed by Mr. Gomme. It is taken from the Census Returns. (*To the witness.*) At the bottom you see each of those parishes totalled up. I will take the last column first. Does column 5 agree with your figures that you supply—769,454?—Yes.

24,512. Now, in the columns before, do not you find that all these parishes total up to 1,350,594?—Yes, here.

24,513. If that is from the census, that shows that, in the district you are authorised to supply, you are not supplying about one-half of the people—

(*Mr. Pember.*) What census is it?

(*Mr. Balfour Browne.*) The census of 1896.

(*Mr. Pember.*) There is none of 1896.

(*Mr. Balfour Browne.*) I beg your pardon, there was a census of 1896.

(*Mr. Pember.*) Taken by whom?

(*Mr. Balfour Browne.*) In the county of London—by the Government; and these are the figures. I do not know whether you care to look at them.

(*Witness.*) But may I point out to you what I think is a slight error?

(*Mr. Balfour Browne.*) Certainly, anything you like.

(*Mr. Pember.*) Is that a daily or a nocturnal census?

(*Mr. Balfour Browne.*) The ordinary census and the returns are Government returns.

(*Mr. Pember.*) I am told it was not a return of those who slept in the houses, but a daily census.

24,514. (*Mr. Balfour Browne.*) I am told it is. (*To the Witness.*) You wish to point out something, I understand?—May I suggest that the heading of this column 4 shows the population authorised to be supplied by the East London Company?

24,515. Perhaps that is wrong. It means the population in the district which you are authorised to supply?—Yes, authorised.

24,516. Every one of those parishes, of course, you are authorised to supply?—Yes; but the New River Company are supplying here in all probability.

24,517. I know that quite well. Now I want to ask you something else. Is it a fact that in the year 1897, as compared with 1896, you increased your number of supplies by 4,382. This is taken from your own accounts, so that I think it is likely to be accurate?—I daresay it is quite right.

24,518. It is 1897 as compared with 1896?—Which account are you reading from?

24,519. It is in your annual account?—Table 2.

24,520. I do not think it is in the table you have put in. I suggest to you that you increased your number of supplies by 4,382 in 1897, as compared with 1896?—Yes.

24,521. Now will you tell the Commission how, if you increased your supplies to that very large extent, which is more than any other company in London, you were able to reduce your expenditure in the same years from 148,067l. to 134,855l.? These figures are also from your accounts. You have reduced your expenditure by 13,232l.?—In the year 1896.

24,522. 1896-7 as compared with 1896—the very same year that you had increased your supplies by 4,382?—1896 was a very expensive year owing to the drought.

24,523. I see that the result of your saving 13,232l. is that you were able to increase your profits by 28,519l. or 17·88 per cent. as compared with the year before, is not that so?—Are you speaking of 1897?

24,524. 1897 as compared with 1896?—Yes, but I daresay that is easily accounted for.

24,525. Therefore, in that year, by reason of the decrease of expenditure, you were the most successful company in London, and you increased your profit more than any other body, and yet you were on the eve of the famine?—Past the famine in 1897.

24,526. I thought the last famine was 1898?—The last one was in 1898.

24,527. Therefore, in that year of 1897, when you were just on the eve of the famine, you were the most successful company in London, reducing your expenditure and increasing your profits more than any other

company. The next that increased and nearly equalled you was the Southwark and Vauxhall Company; is that so?—I daresay the profit is as you say.

24,528. Those are the figures from your own account. Now, with regard to the return you have handed in to-day, will you look at Financial Return D.?—Which one is that?

24,529. I find that if you take from 1893 down to 1897, and add them up, they come to 654,284l.; am I right?—Yes, I daresay you are right.

24,530. Do you know that under the Smith Agreement you would, in 1893, have been entitled to an annuity of 165,326l.; is not that so?—Yes, I think it is so.

24,531. If I multiply that 165,326l. by five, I get 826,630l., so that, under Smith's Annuity, you would have got in those five years 172,346l. more than you were able to earn; is not that so—

(*Mr. Pember.*) I thought we agreed, a long time ago, we were not going into the wisdom or unwisdom of Mr. Smith.

24,531a. (*Mr. Balfour Browne.*) I am not going into the wisdom of it, I only want to get the facts. (*To the Witness.*) Is not that so—that, as a fact, you would have got, under Mr. Smith's agreement, 172,346l. more than you would have earned in those five years?—Yes, but, of course, the Dobbs' case and Torrens' Act greatly interfered with the profits of the company.

24,532. That is an average, of course, (if I divide 172,000l. by five) of 34,000l. a year?—Yes.

24,533. And that at 20 years' purchase, if you were only entitled to that, would be 620,000l., and at 30 years' purchase it would be 1,020,000l. more than you proved yourselves worth?—Owing to the changes introduced by the Dobbs' case and the Torrens' Act.

(*Mr. Littler.*) Surely awards are for all time?

(*Mr. Pember.*) Not for three or four particular years.

(*Mr. Balfour Browne.*) Will my learned friends, for one moment, hold their tongues?

(*Chairman.*) It is too difficult to follow the evidence with a constant current of interruption.

(*Mr. Balfour Browne.*) It is, and I did not inflict myself on my friends.

24,534. (*Chairman.*) One moment. Forgive me for interrupting you, but you have referred to the Dobbs' case and the Torrens' Act, and they are of what date?—The Dobbs' judgment was given in 1883.

24,535. Then we ought to find in the return you have just put in some great fall of gross or net profits at that time, and I see there is?—The assessments were greatly reduced on both occasions.

24,536. Is that your explanation of the fall in gross and net profits in 1884, 1885, and 1886?—I do not know that it would go so far as that. It might influence it, but there might be very many other circumstances as well.

24,537. In 1884 the fall is but very slight?—Yes.

24,538. You put your failure of your profits to come up to the standard of Smith's bargain with you upon Dobbs' case and the Torrens Act?—Yes, I say that.

(*Chairman.*) Those were in 1883?

(*Mr. Hollams.*) No, the Torrens' Act was in 1885.

(*Witness.*) It had a good deal to do with it, no doubt.

24,539. (*Chairman.*) When was Dobbs' case?—Dobbs' judgment was given in 1883.

24,540. Then one ought to find the effect of Dobbs' case in the revenue of 1884?—Not quite so soon as that. It took some time to settle the new basis; it was almost impossible to define it. It was an important element in the matter of valuation.

24,541. (*Mr. Balfour Browne.*) I think, as a fact, you found that the Dobbs' case did not really much affect your income—by careful re-adjustment you were able to keep your income practically where it was before, were you not?—But it affected our increase.

24,542. It affected your increase?—That is, we should have had more.

24,543. Will you tell me how much more did your company pay to the Chamberlain Sinking Fund in the year 1879 out of the net profits—

(*Chairman.*) Out of the net profits.

Mr. J. A. Crooken den.

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Mr. I. A. Crookenden. (Mr. Balfour Browne.) It is out of net profits that it comes—and not out of gross.

(Chairman.) Profits are not net till that is deducted.

6 Feb. '99 (Mr. Balfour Browne.) It is not the ultimate net, of course, till that has been deducted; but, I think, it is the net as shown in your Financial Return D. That is just what I was ascertaining. If I can help you I will.

(Witness.) Are you asking for 1887?

24,544. 1897; I do not know that it existed in 1887?—We paid 922*l*.

24,545. You are quite right. Now, how much per annum will your company have to pay to this sinking fund, when all the capital to which the sinking fund applies has been issued?—I have not made that calculation.

24,546. We have got it out for you. Is it a sum of 12,700*l*. per annum?—I think it is very likely.

(Mr. Pember.) It depends upon how long the sinking fund lasts.

(Mr. Balfour Browne.) It applies to all this capital.

(Witness.) May I ask what dividend has that been taken from? It is entirely governed by the dividend paid, you know.

24,547. True. Assuming the present dividend to go on, did you take the 222*l*. out of this net, or is this net on return D. without that deduction? I think that is without the deduction?—It is taken off the net profit, I think, for 1897.

24,548. Are you sure it is?—I think so.

24,549. Before the 144,165*l*. is arrived at?—Yes, that is so.

24,550. Now, with regard to the quinquennial, one question. Your district is, perhaps, one of the poorest in London, is it not?—I should think it is.

24,551. Therefore in that district the quinquennial would have, perhaps, the least effect—you would suffer less or gain less by the quinquennial than any other company in London?—I cannot say, really.

24,552. I mean on the very poorest class of property a re-valuation does not make a very great deal of difference, does it?—It does not in our case, certainly; I cannot say relatively.

24,553. We will see what the other companies when they come have gained by it. You spoke of your district as being almost completely built up. Is not building still going on with great activity in West Ham?—East Ham, I said.

24,554. It is going on in East Ham, is it not?—Yes, it is going on in East Ham and in Ilford.

24,555. And all that is still in your district?—Yes, that is true.

24,556. So that although it may be changed in regard to the position in which the building is taking place, it is still increasing very rapidly, and in your district?—Yes, it is increasing, certainly.

Re-examined by Mr. PEMBER.

See 24,481. 24,557. As I understand you, you gave the figure of increase to the noble Lord in the chair of 22 per cent., with a decimal?—Yes.

24,558. Would you kindly just remind us what years that refers to?—That is between 1891 and 1898.

24,559. Because, taking the last decade which is given here in Major-General Scott's Report at page 208, I have got the figures for 1897 as 1,072,829*l*. Then for the year 1897 I have got the figure 1,261,732*l*. I do the sum for that, and I find that that gives an increase for the decade between 1887 and 1897 of 17·6. Two people have done the sum.

(Chairman.) Yes, but we took from Mr. Crookenden, the decennial increase as deduced from the seven years only from 1891 to 1897, and that is the period subsequent to the Balfour Commission.

The Witness withdrew.

[After a short adjournment.]

24,566a. (Chairman.) With regard to the order of counsels' speeches, I have to say that the course most convenient to us would have been that we should have heard the counsel for the London County Council first,

(Mr. Pember.) Quite so, but is that quite fair?

(Mr. Freeman.) You have taken 11 years.

(Chairman.) Up to the date of Lord Balfour's Commission, the increase was ascertained to be 25·8.

(Mr. Pember.) Quite so.

(Chairman.) We wanted to see whether what had happened since confirmed that rate of increase, or whether they had got nearer to the average, and it turned out that they had got nearer to the average.

(Mr. Pember.) They had, and I venture to say again that if you take the years between 1887 and 1897 you will find it is 17·6.

(Chairman.) That cannot be. You must be wrong there.

(Mr. Pember.) It is so, indeed.

(Witness.) Yes, that is so.

(Chairman.) Is it?

(Mr. Pember.) Yes, you will find it is 17·6. My friend suggests I have taken 11 years. I noticed that, before he made the remark, just after I said what I have said. If I took 10 years instead of 11, that is to say, took the figure of 1888, which is 1,090,172*l*., and compared that with the figure of 1,261,732*l*., it would simply be that my divisor would be rather higher, and, therefore, that my 17·6 would be proportionately reduced. But I am told that it is 10 years after all, because it is from the 31st December each time.

(Witness.) You are quite right, Mr. Pember, there, because we said that in our letter to the Royal Commission of the 21st January. We pointed that fact out, and this is for a different period and for a longer one.

24,560. (Mr. Pember.) Now there are only two other points I want to ask you about, and they are these. With regard to 1896 and 1897, my friend suggested to you, as far as I understood his cross-examination, that the expenses of 1897 were below those of 1896; was not that so?—So I understood it.

24,561. Now, were your expenses of 1896 swelled by anything connected with the frost of 1895?—Yes.

24,562. They were?—Very much.

24,563. So that in comparing 1897 with 1896 he is comparing 1897 with an abnormally dear year which immediately preceded it?—Certainly.

24,564. Then so much for that. Now, with regard to Mr. Smith's Agreement; supposing that you take the years that he took, were not those the years which contained the abnormally expensive years—or what years did he take, do you remember?—He took up to 1880, was it not?

24,565. No; he said if you had had Mr. Smith's annuity you would have had a great deal too much for a certain number of years, and those years, if I recollect, were the years including 1896?—Yes.

24,566. Then they included one, if not two, abnormal years?—Yes, that is so.

(Mr. Pember.) I think I am right in my percentage, my Lord, am I not?

(Chairman.) What do you make it?

(Mr. Pember.) I make it 17 with a decimal.

(Chairman.) I only make it 15 with a decimal.

(Mr. Pember.) May I ask what divisor you take? Did you take 1,090,000?

(Chairman.) Yes.

(Mr. Pember.) I took 1,072,000, because I took the year before. My friend says I took 11 years in that way, and that I ought to have begun with 1888 and gone to 1897 inclusive. That would make the difference.

(Chairman.) Yes, from 1888 to 1897 inclusive the increase is only 15·7.

(Mr. Pember.) Then I make it 17 if you take the year before.

because I confess I am not quite sure yet, although I have given great attention to the evidence, whether, for example, the London County Council desire us to find that purchase would be expedient upon any terms,

for instance of arbitration, or whether they want us to find that purchase would be expedient upon certain special terms of arbitration. I profess myself not able with certainty to deduce from the evidence on which, for instance, of those two views the County Council would urge upon us that our findings should be based, and therefore it would have been convenient to us to have heard the County Council first. But, inasmuch as the matter has been put upon strict right, I think the analogy of proceedings before Committees, which is perhaps the closest analogy, would give the County Council the right to be heard last, and accordingly I regret to say that counsel for the water companies must present their arguments to us, so to speak, in the alternative, forecasting according to the best of their judgment what view the County Council will present to us as to the view that we ought to adopt. At the same time, let me add, that I do not think this matter of coming first or coming last, is of the slightest importance in the present case, and that, except so far as the arguments on the one side or on the other, may be prejudiced by not having heard what the case of the other side is, not the slightest influence will be had upon our minds by the order in which the speeches come. However, as the London County Council have thought fit to put it to us as a matter of right, we think that they would have, according to the nearest analogy which we can find in the ordinary practice, the right to be heard last.

(*Mr. Balfour Browne.*) If your Lordship merely gives that as an illustration, I have nothing to say, but if your Lordship desires that the County Council should, even before my learned friends speak, give a categorical answer to the questions throughout, that, of course, I think, would be only fair to be done. I do not know whether your Lordship only used it as an illustration, or whether you really desired to have the information as to what we really were proposing.

23,715. (*Chairman.*) I should be very glad to have the information as to what you are proposing. I threw that out as one of the things which we should certainly be glad to know, and which we do not know very clearly, because we have not had the advantage of an

opening speech from counsel for the London County Council. But that is not the fault of the London County Council, of course, but it is fair that the companies should know.

(*Mr. Balfour Browne.*) If your Lordship would allow me, I think it would be only fair, both to the Commission and to the other side, that that should be answered before my learned friends are called upon to speak, and I shall so advise my clients. I cannot compel them, of course, but I shall advise them.

(*Mr. Pember.*) So far as I am concerned, I am the only independent person in the room. I am prepared to speak at any moment, and I do not care twopence who speaks after me. If I am right I cannot be upset, and if I am wrong I ought to be. That is the view I always take as far as I am concerned.

(*Chairman.*) Very well.

(*Mr. Pember.*) I suppose your Lordship is no better able to say than I should be myself as to when one would be called upon. My learned friends have been good enough to ask me to sum up the evidence, which I should propose to do; and if I could know when I should be called upon to do it, it would be convenient.

(*Chairman.*) How can I tell you, Mr. Pember? It depends upon yourselves. You keep putting upon us witnesses whom it takes us a very much longer time to examine than I wish.

(*Mr. Pember.*) Perhaps your Lordship might go this length with me. Here we are on Monday afternoon, and you have got Tuesday and next Monday and next Tuesday. Might I say that perhaps it might be as well to say that, at all events, I should not be called upon before next Monday week?

(*Chairman.*) I do not see, myself, a chance of it. I wish I could say that I hoped it.

(*Mr. Pember.*) Personally I do not mean to say that I am otherwise than ready to speak now, because I am all but.

(*Chairman.*) I do not think there is a chance of it, as far as I can see.

Sir HENRY KNIGHT re-called and further examined.

24,567. (*Chairman.*) I suppose you desire to give us your view as to the main question before us, namely, the financial expediency of purchase?—Yes, with other matters as well, I hope.

24,568. Any other matter that is referred to us, but I will not undertake to go over all the field?—I always mean that, my Lord.

24,569. Then give us, please, your view about the financial expediency of the purchase of your company?—I think, myself, that from every point of view, purchase is undesirable. From a financial point of view I think it would be a mistake, because the dividend that the companies are allowed to pay is limited to 10 per cent. Four of the companies—the West Middlesex, the Chelsea, the Kent, and the Lambeth—have already reached that maximum.

24,570. Will you confine yourself to your own company? We shall hear the others. You have not reached your maximum?—No.

24,571. Why is it inexpedient to buy you up?—Because, under the arrangement made by Parliament when we were established, Parliament has made certain conditions, which, if adhered to and carried out, will necessitate the company from its own profits finding money for it to be purchased by a trust or some other authority that might be created. For instance, Parliament has said we shall not pay more than a 10 per cent. dividend. When we have arrived at that 10 per cent. dividend, as I was proceeding to show the other companies had, there will be a surplus which is not our property at all. That belongs to the public, and that surplus, if allowed to accumulate, might be used for the purchase of the shares of the company, and consequently that share interest would be purchased up partly by those accumulated profits.

24,572. I do not quite follow you there. Under the arrangement that at present exists, as created by Parliament, any surplus beyond your 10 per cent. and your back dividends must go to the reduction of the water rates?—I do not know whether that is the case, but I will take it from you that it is, but even in that case, if it goes to the reduction of the water rates, it

will amount in the end to the same thing, because a man cannot, to use a homely phrase, have his cake and eat it too. If you give it to him in reduction of water rates, he gets an immediate reduction from the charges which he has to pay, but he puts it out of the power of some trust to get into possession of the share capital of that company and to carry it on in the way that it would be desired to carry it on if it were purchased.

24,573. (*Mr. De Bock Porter.*) Is not the day somewhat distant when your company are likely to pay 10 per cent.?—I do not think so. I think it is immediately in sight.

24,574. You are 3 per cent. off at any rate, are you not?—We are 2½ per cent. off at present, but our revenue is rapidly increasing. We have got ourselves into a state of very high prosperity as regards works and means, and I have not the slightest hesitation in saying that 10 per cent. dividend is in sight, and back dividends are in sight.

24,575. (*Sir John Dorington.*) Your suggestion, in fact, is that the day is coming when, while the companies receive 10 per cent., the water rate on the inhabitants will be so reduced that it will be scarcely perceptible?—That must be a long way off—there is no doubt about that.

24,576. In that way the public will be the possessor of the water companies?—But I myself do not think that it is a wise appropriation of those surplus profits to reduce the water rates. I think if the purchase is desired, they should be accumulated and used to purchase the share capitals of the different companies.

24,577. (*Chairman.*) Except for the sinking fund clauses, you know that is a separate matter. We know that Parliament has so enacted that if you have once reached your 10 per cent. dividend and paid your back dividends, you have to devote any further profit to the reduction of the water rate?—Yes, but I presume Parliament, if it thought fit, could alter that arrangement and make those profits an accumulating fund for the purchase of those properties.

24,578. If you start upon that theory, that the existing parliamentary bargain may be altered, you are on

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a path of peril?—Then it comes to the same thing as I said, namely, it is reducing the water rates, and the time must come when the surplus profits will be very great and the water rates proportionately reduced to a small sum.

24,579. Why is it disadvantageous to the public that the public should buy the chance of that prospective increase of income?—I beg your pardon?

24,580. You are saying purchase is inexpedient because your income is largely progressive, and I ask why is it inexpedient that the public should buy the chance of that largely progressive income?—Because it strikes me that the public might be paying for that increase twice over.

24,581. Why—how?—Because if by the use of the surplus profits from other companies they could purchase the shares of the Southwark and Vauxhall Company at the present price, the purchaser of those shares would be coming in for his share of the profits which would be earned in the future by the Southwark and Vauxhall Company. He would be the shareholder and he would get those surplus profits.

24,582. (Sir John Dorrington.) A public body would be the purchaser?—Yes.

24,583. The Chamberlain of the City of London at present?—Whoever it might be, and he would come in for those surplus profits.

(Chairman.) I confess I cannot understand you.

24,584. (Mr. De Bock Porter.) You were nearer your 10 per cent. in 1880 than you are now, were you not?—Yes, that is perfectly true, but then we have passed through many vicissitudes and troubles since 1880. In one of those years we were paying 8½ per cent. That is the highest dividend we have ever paid; and then after that came very serious matters, which at a later stage I suppose I shall have to deal with, for instance, the Dobbs' judgment and Torrens' Act, and the tremendous frost of 1895. Those are all matters that have supervened, and I may tell you that Torrens' Bill, which was passed by the House of Commons without any inquiry whatever, made a loss to my company of 30,000*l.* a year, and we have had to work against that and recover it, and we have recovered it now, but it has been an enormous loss for all those years since then—we have been losing that 30,000*l.* a year.

24,585. (Chairman.) Do I understand the suggestion that you made just now to be this, that the best way for the public is that the Chamberlain of the City of London, out of the produce of the sinking fund clauses, should buy up the shares of the company little by little?—Yes, that is it. Now we are dealing with the sinking fund; I have been dealing with the surplus profits over 10 per cent. I apply the same argument to the sinking fund. Of course, I am not approving of the sinking fund, because I think it is inequitable and unjust, but, however, I have to deal with things as they are. Parliament has enacted that, and therefore I take that into consideration, and I say that sinking fund will afford a very large amount of money indeed in the very near future, and it will enable a public trustee to gradually get possession of the whole of the shares of the companies.

24,586. In how many centuries?—I do not think it will be a question of centuries. The interests of these water companies and their businesses have taken an immense number of years to raise and create and make. In our case, I think we go back something like 60 or 80 years, and you cannot expect to buy a thing immediately out of its own profits, that has taken all that number of years to bring into a state of prosperity. You must be content to wait your time and take it gradually. You must never forget that every share you get, every share you buy, is putting you into possession of all the advantages attaching to those shares, that is to say, increased future profits, back dividends, and everything else. They will all help to tell up. The sinking fund is a very large item indeed. I can tell your Lordship, in the case of my company alone, what we shall be paying to the sinking fund. I had it carefully worked out; and when we are paying a full dividend of 10 per cent., and the whole of the capital authorised by Parliament has been expended, our contribution to the sinking fund will be 16,507*l.* a year.

24,587. (Major-General Scott.) Is it your view that the sinking fund clauses should be applied to all capital raised in the future, assuming that the companies continued their undertakings?—No, I do not think so, because I think the sinking fund in itself is inequitable

and unjust; but I am dealing with what Parliament has enacted up to the present time.

24,588. And applied up to the present time?—And applying that principle to it, I say my company alone will have to give over 16,000*l.* a year to it. The amount of share capital that the trustee would be able to gain possession of would be of an enormous assistance in diminishing the purchase price that would have to be paid for the companies. In fact it would in time work itself out, in my opinion, and save the raising of money or anything else.

24,589. (Chairman.) I am not quite sure that I follow you; you suggest that the Chamberlain of the City of London will ultimately, by the operation of the sinking fund, become the owner of the whole of the shares of your company?—That is the intention of Parliament.

24,590. That is what you suggest to us now, and that consequently, instead of spending money in buying you out at the present time, it is better to wait till you have enabled the Chamberlain of the City of London to buy you out?—It appears to me to be a rational thing to do.

(Mr. Pember.) I hope you will not think Sir Henry Knight is speaking for the other companies.

(Chairman.) No, I am trying to keep Sir Henry Knight to his own company.

(Mr. Pember.) Or even for himself, I think.

24,591. (Chairman.) Can you give us, dealing with your own company, any sort of clue to the number of years that it would take for the Chamberlain of the City of London to be able to buy you up altogether?—No.

24,592. What is your share capital—4 millions odd?—No, not the share capital. The share capital is 1,020,800*l.*

24,593. And your contribution to the sinking fund is what?—Will be over 16,000*l.*

24,594. Will be when?—When we are paying a 10 per cent. dividend, and we have expended—

24,595. Yes, but what is it now?—Our contribution to the sinking fund at present is very small indeed.

24,596. What is it?—I can tell you that. Our contribution to the sinking fund in the year 1893—

24,597. What was it in 1897 or 1898? Do not go back to 1893?—I will explain all that in a moment. Our contribution to the sinking fund in 1893 was 302*l.* and in 1894, 280*l.* Since then it has been nothing.

24,598. How many years will it take at that rate to raise the million and odd capital?—At nothing per annum it would take an infinite time.

24,599. Surely you do not present that to us as a practical alternative for purchase?—Yes.

24,600. To wait till the Chamberlain of the City of London has bought you up?—I think, if you will allow me to explain further, you will see that it is a reasonable contention. We have paid nothing now because by the terms of the sinking fund clauses and the small dividends we have been paying there has been no margin left for the sinking fund to make a claim.

24,601. Exactly?—But now we have advanced to a 7½ per cent. dividend, and shall, without the slightest doubt, be paying an increased dividend. I say now the time is quite within reasonable bounds when we shall be paying this very large sum to the sinking fund if the sinking fund clause is continued.

(Chairman.) But at 16,000*l.* a year it would take about 100 years, would it not.

(Mr. Balfour Browne.) They have got arrears of dividend of 1,200,000*l.* to pay up before that.

(Witness.) According to the dividends we have paid now, our contribution to the sinking fund next year would be 1,800*l.*

24,602. (Chairman.) That will not go far to buy up the one million and odd shares and the 1,200,000*l.* back dividends?—It would be a very intricate calculation, because there would be a great many things that would have to be taken into consideration. If they were worked out, it would not take anything like the time, I think, that your Lordship anticipates.

24,603. You have not made any calculation of the time it could be done in?—No, I have not.

24,604. (*Mr. De Bock Porter.*) Are you not on the one hand contending that the companies should be left alone until they could be bought by the sinking fund, and on the other contending that the sinking fund is a very inequitable arrangement?—Certainly, I am doing so. As I said before, I am dealing with the state of things which Parliament has created at the present moment, therefore I have a right to use this sinking fund in my argument.

24,605. (*Chairman.*) Parliament has only given this sinking fund for seven years, is that not the limit?—That is not as regards the sinking fund.

(*Mr. Balfour Browne.*) There is no limit as to that. If we purchase within seven years, the Bill of 1898 was not to enhance the value of the company; that is what your Lordship is thinking of.

(*Chairman.*) I thought the sinking fund had a limit, only there was this provision—

(*Witness.*) Unfortunately there is no limit to the sinking fund clauses.

(*Mr. Pember.*) The sinking fund clauses, it is always understood, were given under the impression that purchase was in the air.

(*Mr. Littler.*) It was thought, my Lord, that purchase was very imminent, that was the object.

(*Witness.*) That was the object. Those clauses were given as a temporary measure because there was purchase in the air; however, they may be said to exist.

(*Chairman.*) It is the effect of the enactments that, even although purchase does not take place, the sinking fund contribution goes on for ever.

(*Mr. Littler.*) Unless Parliament otherwise directs, my Lord. It is for the purpose of purchase, and then in case that which was then thought to be imminent did not take place, Parliament reserves to itself the control of what they do with it.

(*Witness.*) That is quite right.

(*Chairman.*) Of course, Parliament always has the control, but if Parliament does not interfere, that sinking fund contribution goes on.

(*Witness.*) If Parliament does not alter it.

(*Mr. Littler.*) But there is no application, my Lord, unless there is purchase. Parliament must decide what is to be done with it then; there must be some application to Parliament.

(*Chairman.*) Yes, but the Chamberlain must buy in the meantime.

(*Mr. Littler.*) Yes, he must, but as to what will happen if there is no purchase, Parliament must say what must happen. It is not that it merely goes on automatically.

(*Mr. Pember.*) Parliament must say what is to be done with the money.

(*Chairman.*) Or the shares. Sir Henry Knight is now suggesting the Chamberlain of the City of London becoming the bloated purchaser of the shares of this company, and, of course, the same thing would apply to all the other companies.

(*Witness.*) If the sinking fund goes on and Parliament did not alter it, he must go on buying the shares of the companies.

24,606. You have made no calculation to see how many years it would take him to buy up your company?—It would take a great many years, no doubt, but I think it would be a very advantageous way of buying the company if it is to be bought at all. It is really buying the company out of funds provided by the company itself.

24,607. Could you say whether it would take him one century, two centuries, or three centuries?—I could not say. I have not made the calculation. I do not think it would be anything like so long.

24,608. (*Major-General Scott.*) Do you say that the sinking fund clauses should be applied to all future capital, and that that should be used as a means of buying up the companies?—No, I do not think so, for the very reason which I have stated, that I think it is an unfair clause to apply.

24,609. (*Chairman.*) Why is it unfair if the assumption upon which all sinking fund clauses are based is a correct one, namely, that any capital raised by the company will earn the same profit as the rest of the

capital of the company?—It is unfair in this sense. If you take any of the companies that are paying their full dividend, and they have to borrow money for their works, and the sinking fund clause comes into operation, it makes those companies borrow that capital at 8 per cent., whereas if they were not subjected to the sinking fund clauses they would borrow it at 3 per cent.

24,610. Borrow at 8 per cent.?—Yes, that is the operation of the sinking fund.

(*Mr. Lewis.*) That is the peculiar effect of it, because it brings in all the old capital; it operates upon the old capital as well as the new.

24,611. (*Chairman.*) Surely what is paid to the sinking fund is the difference between the interest the company have to pay on money raised by debentures and the average profits that they earn upon the whole of their capital?—Yes.

24,612. With 1 per cent. added for management?—That is quite right.

24,613. Then if a company is making 10 per cent., and it borrows debentures at 3 per cent., what it pays to the capital is the difference between 4 per cent. and 10 per cent., or 6 per cent.?—Yes.

(*Mr. Pember.*) That is it. Take the West Middlesex, for instance, which is one of those for which I appear; the surplus which is now going in reduction of rates would simply have to go to find that sinking fund.

(*Mr. Littler.*) Which would be an absolute loss to the consumer.

24,614. (*Chairman.*) That is another consideration. We were upon the raising of capital at 8 per cent., which is what I cannot understand. (*To the witness.*) You raise your capital at whatever your credit enables you to do it at?—Yes.

24,615. And I suppose that is about 3 per cent., or 3½ per cent., or 3¾ per cent.?—Yes; and your Lordship has very properly shown that it is 6 per cent. you pay owing to the sinking fund, and then you pay your 3 per cent. as well, that is 9 per cent.

(*Mr. De Dock Porter.*) But you see one goes to the benefit of the public.

24,616. (*Chairman.*) The supposition that justifies the sinking fund clauses is that you are supposed to have made 10 per cent. out of the capital which you have raised on debentures?—Yes.

24,617. True, you pay 6 per cent. to the sinking fund, but you have earned it, and you pay 3 per cent. to your creditors, but you have earned it, and you have got 1 per cent. in your pocket for your management?—Yes.

24,618. You are not out of pocket, you are only prevented from making on your new debenture capital the large profits which you are making on the rest of your capital?—Yes.

24,619. (*Mr. Pember.*) That is perfectly true if you do make it?—It is if you do make it.

24,620. (*Chairman.*) Exactly, that is the hypothesis that lies at the root of and justifies the sinking fund clauses. Parliament says, we will assume that the capital you are going to raise will produce the same profits to you as the rest of your capital, but we will not allow you to make those large profits, you shall only pay yourself your costs out of pocket, your interest on your debenture fund, your 1 per cent. for management, and the expenditure, and the rest shall go to a sinking fund?—Very well.

24,621. That is the theory of the clauses, is it not?—Very well, that still comes back to the point of the answer which I made to your Lordship's question—that in point of fact it necessitates a company which can borrow money at 3 per cent. paying 8 or 9 per cent. for the use of it.

24,622. Not a bit of it; you do borrow your money at 3 per cent., but it prevents you from taking advantage of the 10 per cent. profit which you make in your own business on that capital?—And if we were not paying the 10 per cent. dividend, all that money which we pay to the sinking fund would go to enhance our dividend, and consequently we should be nearer approaching the time when we should be paying the full 10 per cent., and the public would be getting the benefit of it.

(*Mr. Littler.*) It does not need the sinking fund to protect the public, as to that, the auction clauses do that; that is their protection.

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(Chairman.) The auction clauses?

(Mr. Littler.) Yes; the auction clauses; they require the money to be put up for auction and sold for what it is worth in the market. That will protect the public, and that was the very object of them. They are the Standing Order for all England, but the sinking fund is a distinct thing here, because Parliament thought at that time that purchase was an almost immediate certainty.

24,623. (Sir John Dorington.) You do not borrow the money at 8 per cent., but you burden the undertaking, you burden in fact the consumer, with 6 per cent?—Certainly.

24,624. That is what it is, in the same way as a sinking fund for any public loan is a burden on the ratepayer?—It is a burden on the consumer, most assuredly.

24,625. (Chairman.) That is, you are not allowed to put into your own pockets the 6 per cent. which you otherwise would?—If we did it would advance the time when we should pay our 10 per cent., and the public would get the benefit of it.

24,626. (Mr. De Bock Porter.) Yes, but in the interim, it would go to the shareholders instead of to the public?—Yes, that is true; it must be so, but the public will lose it again by deferring the time when they get their reduction from the 10 per cent.

24,627. (Chairman.) Of course it is not for us any more than for you to criticise what Parliament has done, but obviously the idea of Parliament in all these clauses is that this period of 10 per cent. dividends is closed?—Quite so, and I simply say that by the option of the sinking fund you defer the time when the 10 per cent. dividend will be arrived at.

(Mr. De Bock Porter.) Yes, but the public gets the advantage of it in another way; it goes to the sinking fund, otherwise it would have gone into the pockets of the shareholders. It is true it postpones the reduction in the rates, but the public gets the benefit, instead of the shareholder.

(Mr. Claude Baggallay.) The public do not get anything out of the sinking fund.

(Mr. De Bock Porter.) It is insuring for their benefit.

(Mr. Claude Baggallay.) It is tied up, it is simply accumulating.

(Mr. De Bock Porter.) Yes, but in the interest of the public, not the shareholder.

(Chairman.) Nobody suggests the City of London is going to get all this.

(Mr. Claude Baggallay.) No one knows when the public will get it.

(Mr. Pember.) It will come to somebody's son, with a great number of "greats" before the "grand."

24,628. (Chairman to witness.) I have now, I think, fully appreciated your one suggestion, that you should wait for the operation of the sinking fund clauses to bring about a gradual and silent purchase and extinction?—The surplus profits, plus the sinking fund clauses.

24,629. But, on the other hand, I want you, if you can, to help us as to the financial expediency of buying your company as it is now, and at once. Why should that be a loss to the public?—Because I do not think a purchaser of the company would possibly be in the same advantageous position for working the company as we are in after our many years' experience. There will be a loss to the public in the greater expense that will be incurred in working the concern.

24,630. Is that all? Is that the only disadvantage that you see?—As regards the public?

24,631. Yes?—I think that there are other disadvantages which might arise of a very serious character. The company has now, by men who understand the working of it, been brought into a state of prosperity and able to perform its duties in a most satisfactory manner. I very much doubt, indeed, whether, in fact, I am quite sure, with a new body taking it in hand there would be some peril that the same satisfactory results would not be obtained.

24,632. But they would take over your engineers and your secretaries and all your valuable officials?—They might do so, or they might not.

24,633. Supposing they did, where would the suffering be? I really will not press it. If you have

nothing more to say about the financial inexpediency of purchasing your company, I will pass away from that, but if you have, pray, tell it at once?—As regards this question of purchasing one company which your Lordship has dealt with, I think it has been decided and has been generally understood that all should be purchased. Parliament, in fact, has refused, I think, to listen to any proposition for purchasing one company. It has always been on the condition that all should be purchased.

24,634. Yes, but really I must ask you to answer my questions as I put them. I asked you to deal with your own company which you know, and to point out the financial disadvantage to a public body purchasing you; how would the consumer or that public body be losers? Do not go off into questions of general policy, please, on the purchase of all the companies and so on?—As I have understood the evidence before your Lordship, all the evidence that has been given has been on the assumption of buying the whole of the undertakings, and I have so worked on that assumption. Now you are putting to me the matter of the purchase of one single company, which certainly is not a matter which I have looked into as closely as I have the question of the purchase of the whole.

24,635. Tell me shortly, please, what you have to say about the disadvantage of buying the whole of the companies—only do it shortly, please, inasmuch as we have the eight chairmen to hear?—I have given you one reason why it would be disadvantageous financially to buy them; the only other reason would be as regards management.

24,636. What is your reason as regards management?—I will give it you in a moment. The remarks which I made just now affecting one company apply to the whole more forcibly than they do to one.

24,637. What remarks?—As to the extra expense, that would be incurred by parties who are not acquainted with the business of the company as closely as the directors are. They would incur much larger expense in carrying the business of the company on than the present companies do.

24,638. But if they get the same engineers, the same secretaries, the same collectors, the same machinists, and so on, why should they spend more?—We always find, and we have found from our experience, that when a large undertaking is in the hands of a public body, that public body would generally spend a deal more money in the construction of works.

24,639. What experience leads you to say that—what instances have you got of a public body acquiring a work of this kind and spending more when it has got it?—I do not know that I can give you a better illustration than the very case now before your Lordship's Commission. Here it is supposed that a larger quantity of water—it is no doubt not supposed, but it is a fact—that a larger quantity of water will be required for the supply of the Metropolis in the future. You have got the company's officers before you—men experienced in the management of the business, with a scheme for making storage reservoirs in the valley of the Thames which can be carried out at a comparatively moderate cost, you have got a public body coming before you with a grand scheme, not to utilise the water which is at your doors, but to go all the way to Wales and bring in a supply of water from that distant place—I do not know what the cost may be.

24,640. (Mr. H. W. Cripps.) You know they could not go all the way to Wales without having an Act of Parliament for it, and the question of the necessity for that would then be tested. You must not put it that they would go to Wales directly, as soon as they had got their powers?—That is so, but I am only dealing with the propositions before your Commission. There you have a proposition emanating from a public body, millions and millions in excess of that which emanates from the private bodies. I say that is an illustration which is in support of what I state, namely, that a public body would spend a deal more money than would private bodies.

24,641. (Chairman.) That is not a question of management; you said that the management by a public body would be much more expensive; then I asked you to give me an example drawn from your own experience that would justify that statement and you have none to give me, you only give me what you suppose will happen in the future in the case of a particular purchaser of the London companies. You

suppose that if the County Council purchase they will go to Wales and spend an unnecessary amount of millions?—That is the case they put before your Commission, I submit.

24,642. Have you any experience tending to show that a public body purchasing a water undertaking makes the management of that water undertaking more expensive than it was before?—That is a question which is very difficult to answer until you know more.

24,643. I should have thought it was so easy to answer—you either have such experience or you have not, therefore, yes or no will be a sufficient answer?—I have no experience upon that point up to now.

24,644. Then we will pass from it?—I have no data before me to express an opinion upon.

24,645. If you have got no experience, let us grapple with theory. Any purchaser of your company must purchase, I suppose, by arbitration?—I suppose that must be the result in default of agreement.

24,646. We must suppose a fair arbitrator and a just arbitrator?—Yes.

24,647. Suppose a fair and a just arbitrator who knows what he is about, he will make a purchaser pay the present value of their present income?—And something more besides, I should hope.

24,648. He will make him pay that?—Yes.

24,649. Besides that he ought to make him pay the present value of any assured prospective income?—Certainly.

24,650. If he gives the right sum for those two things, how will the purchaser be a penny the loser?—Because I think it is not all the arbitrator ought to give.

24,651. What ought he to give besides?—You come to me as an unwilling seller, and you come to purchase me by compulsion. I do not want to part with my business. It has taken me all these years to build up, in the early stages of which I made no profit at all on my capital, and I say that I must be remunerated. You come and take a business that has got a very good goodwill, and a valuable goodwill, and I say I must have something to compensate me for the loss of that.

24,652. Is not your goodwill represented by your prospective income?—No, I do not think so.

24,653. What more is there in your goodwill besides prospective income?—There is the fact of the business that we have established.

24,654. The establishment of a business unless it is translated by some income is nothing?—Yes. You are bound to take into consideration those years which were passed through in the early stages of the undertaking.

24,655. Why? If I am buying an undertaking now, why am I to give more for it, because it has been very unprofitable and very unsuccessful in past years?—Because the present proprietor, who is an unwilling seller, says, I lost money in those years; now I have a chance of making that money up.

24,656. I give you your prospective income; whatever prospective income you can show would probably accrue—that you are to have?—Yes; and I think I am entitled to something more beyond that.

24,657. How can you be entitled to something more? If you were left alone, your income would increase by 1 or 2 per cent. every year; your sacrifices and your efforts in the past can never result in anything more in cash than that to you?—No, but then I am an unwilling seller.

24,658. What difference does that make? We will come to the soothing of your feelings in a moment; but as to the value of your undertaking, how else can you express the value of your past efforts and your past losses, and your past failures, except in the prospective increase of income?—Only in the way that I have suggested to your Lordship.

24,659. You have suggested nothing that I can understand—I am sure it is my fault?—I also take the experience of the past. We always find it has been a custom which has been pretty well universally recognised in similar purchases, that a certain sum of money has been added to the then agreed value for compulsory sale.

24,660. How are you to measure that—how are you to estimate what you ought to add in consideration for the fact that you miserably failed in the past?—I have supposed that that will be a matter for the arbitrator, having heard the arguments on either side.

24,661. I want you to give me those arguments if if you can. Can you give me any estimate?—There is no doubt there are the items, which your Lordship has enumerated, to which I have assented; and the only other item which appears to me is that item which I think should be given to an unwilling seller, as a sort of solatium for having a good business taken from him.

24,662. What item?—Something beyond the values which your Lordship has indicated before.

24,663. I have put my difficulty to you sufficiently?—I am very sorry if I have not been able to deal with it.

24,664. (*Sir John Dorington.*) Is the shareholder the possessor of the business, in your opinion?—Yes, he is the possessor of the business, certainly.

24,665. Supposing he had, to represent his business, stock producing the same value as his present income, and perhaps something more for his prospective income, where would he be damnified?—If you gave him stock producing the present income, and that stock was of such a nature that he would not have to sell out and re-invest, I do not say that he would be damnified at all; but beyond that I still maintain that you ought to give him something for taking a good business from him which he has been at great pains and trouble to make.

24,666. (*Chairman.*) But you give him the full value of that business in the present and the future?—I am afraid I cannot see my way to answer you more satisfactorily than I have. I still beg to be permitted to differ from your Lordship in that respect.

(*Chairman.*) Do not suppose I am expressing any opinion at all. I am only putting to you a case that may be presented to you; and I want to know your answer to it. Do not suppose I am expressing opinions in what I am saying.

24,667. (*Mr. De Bock Porter.*) Would you say that the present Stock Exchange value in no way expresses the value that you put upon the undertaking?—No, it does not, because the public who affect the price on the Stock Exchange do not see as far as we, the directors, see, what is the value of our undertaking.

24,668. Then you do not consider the present value of stock any index of its real value?—No, I cannot go so far as that; I think it is an index as far as it goes, and that is all.

24,669. (*Chairman.*) But you think the Stock Exchange does not allow sufficiently for that future prosperity or future increase which you, knowing all about it, anticipate?—No; and that is fully exemplified by the present state of things.

24,670. Let us see: is that why the Stock Exchange value is not sufficient—that it does not allow enough for the prospective increase which you contemplate?—That is why; they do not know.

24,671. (*Mr. De Bock Porter.*) But still your proprietors are willing occasionally to put stock in the market at the present day?—Certainly; if a man wants to sell, he has to take what he can get for it.

24,672. (*Mr. Lewis.*) On the other hand, the Stock Exchange does not take into account the operation of the sinking fund clause?—I do not know whether it does or does not; I cannot say. Of course, as a general view you would say, with regard to the price of the article in the market, that the man who buys it is supposed to know all about it, what are its advantages and what are its disadvantages. But what I say is this: as regards the water company's stock, at any rate as regards my company's, the prospects of the company are very different to what they have been supposed to be. Those facts are not in the minds of the general public, and consequently the value as represented by the shares on the Stock Exchange is not the value. I would illustrate it in this way: six months ago the Southwark and Vauxhall shares could be bought for 160l.; to-day you cannot buy them under 202l.; therefore, the Stock Exchange evidently did not know what I knew—what were the prospects of the company in those six months.

24,673. (*Chairman.*) Do you think it was the evidence you gave us the other day that has made the shares shoot up?—No, what has made the shares shoot up is because the public have to some extent realised what was known to the directors by our having paid an increased dividend for the last half-year.

24,674. It was the increased dividend?—That is the way it has been made known to the public. Therefore,

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Sir H. Knight. I say, the Stock Exchange value is not to be taken as representing the value of the shares of the companies.

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24,675. I suppose the Stock Exchange follows slowly the rise of dividend—it does not anticipate the rise of dividends as a rule, it follows it?—That is about the plain statement of it.

24,676. Of course the prudent purchaser takes care not to give too much for possible future gains?—He knows nothing about future gains except by general rumour.

24,677. And gossip on the Stock Exchange?—Stock Exchange rumour, that is all.

24,678. Have you got a broker who belongs to you, as it were?—As a company, do you mean?

24,679. Yes, who represents the company?—We never have any occasion to employ a broker.

(*Mr. Claude Baggallay.*) All new capital has to be sold under the auction clauses.

(*Witness.*) Everything is tendered for; we employ a broker so far as getting a quotation for a new stock, that is all.

24,680. (*Chairman.*) Have you anything to add upon this point of the financial expediency, or in expediency, of purchase? I have put difficulties to you, not as adopting them, but in order to elicit what you have to say?—On that question of the in expediency of purchase by a public body, I have given you the illustration of the case that is before you now.

24,681. You say it is inexpedient to sell to the London County Council because they are bent upon Wales?—No, but because I am quite satisfied that they would carry out all future works in a far more extravagant manner than the companies would if left to themselves.

24,682. Why are you satisfied of that now?—I can only judge by what I have seen in the past. Two or three years ago what did we see? We saw the London County Council making a proposition to build municipal buildings. They selected the most extravagant site in London—by the side of Trafalgar Square, and put down the cost, which ran to I do not know how many millions. We, the water companies, in managing our concerns have not gone to an enormous expenditure for offices and matters of that sort.

24,683. Do you mean to suggest that if they were the purchasers, they would instantly erect a palace over your engine-house?—I am not suggesting anything of the sort, if you will excuse me; but I am suggesting that we can only gather by illustration what would be done in the future by what has been proposed to be done in the past, under other circumstances and conditions.

24,684. (*Mr. De Bock Porter.*) Have we not the experience of three or four very large municipalities? Take Manchester, Birmingham, and Glasgow. Has it been so very disastrous in their case for the public?—I know nothing about those except what I have read in the evidence that has been given before this Commission, therefore, if I repeated anything at all, it would simply be what you have heard before as regards these matters. I have prepared a table as regards some few of these places, and I can show you the difference between their charges and ours.

24,685. (*Chairman.*) Another table—we have already had two or three from the water companies?—I know, and I have been very chary about introducing any other tables to your notice.

24,686. Is the table different to those we have had, or not?—This table shows the average amount received per 1,000 gallons for water supplied by the eight metropolitan water companies, and also in six provincial towns, where the water supply is in the hands of the Corporation. This is on rather a different basis to what you have heard, because this is on the basis of the total amount of water supplied. If you take the Southwark and Vauxhall Water Company, you will see we get 4·7d. per cent. for every 1,000 gallons of water we supply; Leicester gets 10·6d. per cent. for every 1,000 gallons of water they supply; Nottingham gets 8d. per cent., and Birmingham gets 7·2d. per cent. The only one that gets a price approximating to our own is Liverpool; they get 4·8d. per 1,000 gallons, whilst ours is 4·7d. per 1,000 gallons. There is one that gets it very much cheaper, that is Glasgow. They get it at 2·6d. per 1,000 gallons, but then, of course, Glasgow can hardly be compared, because the water is at their door, so to speak, and it is not filtered, or anything of that sort.

(*The witness handed in the table. See Appendix V, 1.*)

24,687. (*Mr. De Bock Porter.*) The Thames is at your door, is it not?—Yes, but it has to be filtered.

24,688. (*Chairman.*) Manufactured?—It has to be brought a long way. It has to be brought something like 19 or 20 miles before it gets into our district.

(*Mr. Claude Baggallay.*) You have to construct a reservoir.

24,689. (*Major-General Scott.*) And it has to be pumped?—All our water has to be pumped. Glasgow, you know, is supplied by gravitation, and has no pumping, and no expense of that sort at all, so that they can hardly be brought into comparison. Still there is the fact that water supplied in London by our company is cheaper than the water supplied by those large provincial towns.

24,690. (*Mr. De Bock Porter.*) How were those six towns selected?—Because they are six large towns, that is all.

24,691. Does the table include Manchester?—Yes, Manchester is 6·2d. against our 4·7d.

24,692. (*Mr. Claude Baggallay.*) It gives the six largest towns?—The six largest; that is the idea.

24,693. (*Chairman.*) The six largest of the 19 we have already had?—Yes, I suppose so.

24,694. (*Mr. De Bock Porter.*) But you have only contrasted these charges with those of your own company, that 4·7d. is not the average?—No, the average in London is 6·9d.—that is 7d., you may say. Even then, Birmingham, Leicester, and Nottingham are above that average of the whole of London. I can give you the quantities supplied per head if you think it would help you at all.

24,695. (*Chairman.*) No, thank you, my head will not hold all these tables; I assure you I am surfeited with them?—We supply 40 gallons per head against 28 gallons per head supplied by Liverpool for the same money.

24,696. I forget, but I think your rates for water are not among the high rates in London?—That is so.

24,697. You are lower than Lambeth?—We are lower than Lambeth, but our percentage is higher than the other companies, I think. I can give you all those matters in detail.

24,698. What do you mean by your percentage being higher?—We are allowed to charge 5 per cent., the West Middlesex, I think, 4 per cent., and the Lambeth 7½ per cent. However, I can give your Lordship full information on that point, as I have the tables before me.

24,699. I think we have had all of it—we do not want it over again?—You have got it on the basis of population, I think, or rateable value, but that gives you a false conclusion; you ought to have it on the amount of water supplied, and the quantity supplied per head, else you will not get it correctly.

(*Mr. Balfour Browne.*) The company does not charge by quantity of water supplied, but by rateable value.

(*Witness.*) I have a table which shows the variation in the percentage which has to be charged on the rateable values of each of the companies; it also shows the gross annual income; and another column shows the annual expenditure; consequently you get the net annual income per house. You will see that our net annual income per house is 1·06l., and we get 157l. per thousand people, and supply 280 gallons per house. If your Lordship will compare that with one of the lower charging companies—take the Chelsea Company for instance—you will see how enormously cheaper we supply water than the Chelsea Company do, although their authorised rate per cent. is only 3 to 4 per cent., against our 5 per cent.

24,700. Will you put in that table?—Yes.

(*The witness handed in Table. See Appendix V, 2.*)

24,701. You have not put your rates that I can see, anywhere in this table; are your rates higher than the Chelsea rates?—Our rates are 5 per cent.; the Chelsea are 3 to 4 per cent.; but although we have 5 per cent. and they have 3 to 4 per cent., yet we supply water cheaper than they do.

24,702. Half as cheap?—We supply it at 1·06l. per house, as against their 2·75l.

24,703. That is less than half?—Yes. Then we supply per thousand people for 157l., against their 372l.

24,704. Therefore, although you have got a higher percentage of charge than the Chelsea, you supply your water cheaper, or at less money?—Cheaper; that is the point I want to emphasize.

24,705. I suppose you account for that by the fact that the Chelsea district consists of highly-rated houses, whereas yours consists of poor houses?—That is the reason, I have no doubt.

24,706. Do you think that that variation of charge between your 5 per cent. and the 3 to 4 per cent. of the Chelsea would have to be maintained even by a purchaser?—Certainly, it ought to be maintained?—It is only right and proper that the variation in the charge in different parts of the Metropolis should be maintained. It would be a great injustice in my opinion, and very unfair to the poor, especially if there was an equalisation of rates all over the Metropolis, unless you equalise them down to the lowest charge. Then that would bring it to a charge that it would be impossible for a business company to supply water at all in our district. A company can supply water in a good district at a very much lower percentage than we can in our district. Therefore, the only levelling down would be levelling down to the lowest; and then I do not know what extra charge would have to be made on the public in the form of some rate-in-aid.

24,707. Is there much difference between your district and the Lambeth?—Yes, a very considerable difference.

24,708. Which has got the worst class of houses?—We have.

24,709. Then, on the other hand, Lambeth has a rating power much higher than yours; has it not?—Yes, they are 5 to 7½.

24,710. How can you justify that extra 2½ per cent. that the Lambeth have got, if they have got a better district than you?—Those terms were fixed by Parliament.

24,711. Of course, I know that; but I ask you to justify it?—I cannot justify it with the information that I possess at present. What I was proceeding to say was that Parliament had all the information before it at the time, and no doubt justified the charge. That is the only reply I can make.

24,712. You do not see any justification for this, namely, that in two adjoining districts the better one should have the higher percentage?—Except this—it may be, and I think it is, that the Lambeth district is far more scattered than the Southwark district. Our houses lie very closely together, and, consequently, although they are poor and small, yet they are not at such a long distance apart, and scattered like the Lambeth Company's houses are. That may be a reason; but I cannot give the reasons. Then, again, the Lambeth supply at a much higher level than we do.

24,713. More pumping to do, I suppose?—That would be a reason why they ought to have a higher price.

24,714. (*Sir John Dorington.*) What level do they run up to?—400 feet, I am told by our engineer.

(*Mr. Claude Baggallay.*) At Sydenham and Norwood they have a very high district.

24,715. (*Chairman.*) Do you find examples of a similar variation of charge in other common requirements of the whole Metropolis?—Yes. Alluding to the other companies, you will see on the table I have put in that they are all set out there.

24,716. I have now passed from water; I have heard, I believe, what you have got to say in justification of the varying charges for water, but I thought you would, perhaps, wish to strengthen your argument by pointing out that there are varying charges for other requirements as well as water?—Yes. It is a recognised principle that the occupier of a large house pays more than the occupier of a small one. For instance, suppose the rate for this purpose is 1s. in the £, the occupier of a house worth 500l. per annum pays 25l., while the occupier of a house worth 25l. pays 25s.; and so it is with lighting and every other expense of making or maintenance. But the lighting and the maintenance is the same in each case, and the occupier who pays 25l. has no more right of user of it than the 25s. occupier. I am speaking of repairing, cleaning, and maintenance of roads. Those charges vary in every district of the Metropolis, yet the user of the roads is common to all

inhabitants, from whatever district they come. And then there is that comparison that I have placed before your Lordship. So it is with all taxation; a man with a big house pays more for poor rate than a man with a small house, and the poor rate differs all over the Metropolis.

24,717. When you say more, of course he pays more if he pays so much per cent., but he does not pay more in proportion?—No, not if you take the value of his premises.

24,718. I do not quite see how that justifies a difference between 7½ per cent. for a Lambeth house and 5 per cent. for a Southwark and Vauxhall house, those houses being upon opposite sides of the same street?—That would be so to a very small extent. There are a few streets where we supply side by side; but, as I said before, I cannot possibly go into the reasons which induced Parliament to give 7½ per cent. I can only state the reasons which I have to your Lordship—difference in the level, and a more scattered district. At the time when the rate was made, it is quite possible that the Lambeth district was very sparsely occupied.

27,719. Of course that does not concern you immediately, but it will concern Lambeth a great deal, because it has been suggested that any arbitrator who fixed what you were to be paid should have the power to say this 7½ per cent. is altogether an iniquitous charge, and ought to be cut down to five?—On that point, if you will forgive me, I would say the Lambeth Company, when they came before you, would be the best parties to explain it.

24,720. Very well. I suppose you would defend also the proposition that, although you do not supply that water, you are to go on receiving the charge?—It is palpable, I think, that that must be so. There is no foundation for any other course that I know of. It is not the quantity consumed that causes the charge. Water in its crude state costs next to nothing; but in order to render it of excellent quality and deliver it to the houses there is an enormous outlay and expense, and it is to pay a fair profit on those that the rate is levied. There are heavy expenses—payments to the Conservators, watching and purifying the river, storage, filtration, engine power and buildings—then for trunk mains and distributing mains and pipes, and then for all the great expenses of the management and maintenance, and the innumerable outgoings of a great business. All this has to be done to put a single gallon into any premises, and all these expenses are constant. If from frost or some other circumstance beyond the company's control, the occupier gets no water, all these expenses are still going on, and a great many more in addition; and in the case of frost the stoppage is mainly caused by the exposed condition of the occupier's own supply pipes, and the absence of adequate storage on his premises to meet such an emergency. It is evident, therefore, that the company ought to be recompensed, even though they cannot supply the water, because I say it is for the construction of all these works that you have to pay interest, and if the companies had not been secured by Parliament in the receipt of a payment to represent the interest in all these works, you would never have got the capital subscribed at all to carry out your water undertakings.

24,721. How long is that to go on, because it does strike the mere lay mind not versed in water business as a little odd that you are to go on for ever paying water rates and getting no water?—It could scarcely go on for ever.

24,722. That is why I asked you; you say it ought to go on although there has been a frost, although there has been a drought, and although there has been a failure of supply for some reason; I ask you how long ought it to last?—It might go on as long as the supply is interfered with from circumstances beyond the control of the company.

24,723. If the company says: "I have got no reservoirs, I cannot help it, my supply is out; I have no water to give you"?—The question of no reservoirs, I submit, is a matter within the control of the company; but an insufficiency of reservoirs, caused by an extraordinary state of natural circumstances, is not within the control of the company.

(*Mr. Pember.*) Drought and frost, I think, are the only two causes of exemption.

(*Chairman.*) And all unavoidable accidents.

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Sir H. Knight. (Mr. Claude Baggallay.) Beyond the company's control—it all turns upon that.

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24,724. (Chairman.) Then I should like to hear from you what is within the control of the company. Supposing the company has been wanting in foresight, has not provided reservoirs enough, has not provided pumping power enough, has not provided duplicate mains and pumps when they ought prudently to be provided; is it then to go on getting its water rates, although it supplies no water?—That would all depend as to whether the deficiency in any one of the circumstances which your Lordship has mentioned is caused by any ordinary natural causes, or came about from extraordinary natural causes.

24,725. (Sir John Dorington.) Who would determine that?—I maintain that a company supplying water ought to put itself into a position to meet all ordinary and natural circumstances; but I maintain that it is not in the interests of any body that it should put itself in a position to meet causes which may never arise at all; that would be an useless expenditure of capital and a waste of money.

24,726. (Chairman.) Then you would have said that any company was acting foolishly, which in 1897 provided itself with a storage for such a year as 1898?—1898 was an exceptional year.

24,727. Exactly; do not repeat it all over again. Is what I have just put to you a fair inference from what you have just said—1898 was an exceptional and extraordinary year not to be foreseen—therefore it would be absurd to require a company to provide itself for such a year as that?—I do not say it would be absurd; I think it would be unadvisable—

24,728. Very well, I will take the milder word, “unadvisable,” if you like—?—Because it would be a great expenditure of capital.

24,729. So if we get another year of drought next year again, the consumer has to go on paying water rates, and absolutely gets no water?—Yes, if we have the same exceptional circumstances as regards that year.

24,730. When does a year become exceptional?—When it gets something extraordinary beyond that which previous experience has taught us to expect.

24,731. I suppose you expect to get years sometimes above and sometimes below the average?—Yes.

24,732. At what point of variation from the average does it become an extraordinary year, for which the company are not responsible?—I think I could only answer that by reference to what we have seen in the past. Our experience in the past has led me to the conclusion that 1893 would be a fair year to expect the companies to provide against.

24,733. But not 1898?—No, I do not think so. I think it would be legislating under a sort of feeling of panic to provide for 1898.

24,734. (Major-General Scott.) But there is no reason why a year like 1898 should not recur next year?—The only reply to that is that it had not occurred for something like 100 years previously. Of course, it can, and anything might occur; the Thames might run dry next year, but that is not the way, I submit, that we should legislate to meet such requirements as those.

24,735. Should not a company providing for vast populations like that of London, fit its works to meet any known emergency?—I said on a previous occasion, when I gave evidence before the Commission, that I considered every company ought to have in reserve at least 4 million gallons per day, not likely to be wanted under ordinary circumstances.

24,736. There you are endeavouring to meet these exceptional emergencies which only occur at very long intervals?—Last year the exceptional emergency was met. It occurred quite unexpectedly, but yet the companies, by a little assistance from each other, were enabled to tide over that emergency. I submit that that is the reason why we need not contemplate or provide for such an emergency occurring again.

24,737. Then you suggest that the companies should do collectively what you consider it is not necessary for a single company to do?—No, I do not say that—far from it. I say it is an absolute necessity, and incumbent upon every company to supply itself with mains and water somewhat in excess of the ordinary maximum requirements of its district. They ought not to be allowed to depend upon a common stock of

water to draw upon, except as emergency arises, such as we had last year; then a common stock of water would be provided, from which a company wanting it would get assistance.

24,738. That is a different way of providing for exceptional emergencies, which only occur at long intervals of time?—That would be one way of providing for it no doubt.

24,739. (Sir George Bruce.) Even in 1898, London was not without water?—No; not at all.

24,740. The company which gave least gave 20 gallons per day per head?—I think it was 25 gallons per day per head.

(Chairman.) Yes, including the trade supplies.

(Witness.) I think it was 25.

24,741. (Sir George Bruce.) You do not call that a famine, do you?—Certainly not. As I ventured to say before, I call it a less bountiful supply than they usually give.

24,742. (Chairman.) We will agree that it is not a famine, and that that would not be the right word to use; but, at least, the state of things in the East London district was a withdrawal of those conditions of supply which have been put upon the company on the one hand by the same Acts of Parliament that have given them the water charges on the other?—Yes.

24,743. I mean the constant supply up to a certain level has been put upon them by the very same Act of Parliament that gave them the right to make certain charges?—That constant supply has been put upon the companies since they were first established.

24,744. Well?—That points to this: that it has not grown up with them from their inception and commencement; it has had to be taken in hand by them in comparatively late years, and they have taken it in hand, I think, exceedingly well.

24,745. You always fly off at a tangent?—I will try not to.

24,746. The point of my question was that, although there was not a famine, yet there was a failure in those conditions of supply which are the obligation of the company, just as their power of charge is their right or their privilege?—That is so.

24,747. Do you contend that the rights are to remain unimpaired, although the duties are not fulfilled?—Those extra duties were put upon the companies without any extra payment.

24,748. Sometimes you take your stand upon the Parliamentary position, and you are satisfied; while, at other times, you grumble at the Parliamentary position. I say, looking at the Parliamentary position as a whole, it on the one hand gives certain rights of charge, and on the other hand imposes certain obligations?—Yes.

24,749. If your contention is that the company is to get all its privileges, and not fulfil its obligations—?—I beg to submit that the rights of charge were fixed many years previously to these extra duties being put upon the companies, and the companies had no extra charge given them for these extra duties. I should like to hand in a table showing the final yearly sums payable to the Sinking Fund by the Southwark and Vauxhall Company when all the present authorised capital, together with the 650,000l. authorised under the Company's Act of 1898, is issued and matured for contribution; calculated on Dividends on Ordinary Stock and Shares, varying from 6 per cent. to 10 per cent.

(The witness handed in Table. See Appendix V, 3.)

(Mr. Claude Baggallay.) Before you leave the question about charging and not supplying, I used the words just now, “beyond the companies' control”; one ought to have the exact words, which are, “frost, “unusual drought, or other unavoidable cause or “accident.” That is the general law, which provides equally throughout the United Kingdom, even if it was a corporation supply.

(Chairman.) Yes, it would not be the less startling if the London County Council were to go on the whole summer exacting water rates, and giving no water. It would be equally startling to the lay mind.

(Mr. Claude Baggallay.) That applies to every company and every corporation. That only relieves

them from penalties. Of course, there is no charge unless there is a supply laid on.

(*Chairman.*) I understood it relieved them from any penalty for not giving the supply.

(*Mr. Claude Baggallay.*) During the temporary period, which is controlled by those circumstances mentioned in the section. There is no water rate if they do not have a supply laid on.

(*Mr. Balfour Browne.*) It still leaves them the right to charge.

24,750. (*Chairman.*) It still leaves then the right to charge, although there is no supply by reason of drought, frost, or other unavoidable accident. I am not saying it is not right; I only want to know how far it is to be carried. What has been the tendency in your district? Has it been for rateable values to go up or go down?—I have the figures for the last few years, and I will give them to your Lordship directly. I can give it to you in the effect of the increase in our revenue only, but in that way it will come to the same thing.

24,751. That is in the table which you handed in at Question 24,700, is it not?—No, it is not in that table.

24,752. That table gives the gross annual income and the net annual income; is that not your revenue?—Yes, but I have got it in a more concise form here. That gives you the whole of the income, including meters. I have got here a table showing the domestic water rental of the Southwark and Vauxhall Company for the years 1891 to 1896, the yearly increase therein and an analysis of such increase.

(*The witness handed in Table. See Appendix V., 4.*)

24,753. (*Mr. Claude Baggallay.*) Might I ask whether those increases shown in that last table are increases which go on during the years coming between the quinquennial re-valuations?—Yes.

24,754. So they are not dependent upon the re-valuations at quinquennial periods?—No.

24,755. These are simply the additions in the interval?—Yes.

(*Chairman.*) Do the vestries each year revise the rate book?

(*Mr. Claude Baggallay.*) They make a supplementary list.

(*Mr. Littler.*) Only in cases of alterations of properties. If there is a general increase in the value of property, or a general decrease in the value of property, they cannot deal with it; it is only at the quinquennials they can deal with that. In between, it is really more new circumstances arising and new properties, or something of that kind, that they can deal with.

(*Sir John Dorington.*) Alterations?

(*Mr. Littler.*) Yes.

(*Witness.*) I see that the increase we got is from new supplies and increase in meter charges.

24,756. What increased amounts have you paid in rates during that period?—Comparing the two years of the quinquennial, the first year, and the last year, the first year it is 18,309*l.*, and the last year, 1896, it is 24,209*l.*, the increase being 5,900*l.*

24,757. 5,900*l.* increase in the rates paid?—Yes.

24,758. 502*l.* increase in the rateable value of the houses you charge?—Yes, that is the result of the five years.

24,759. Then I gather from that that there must be as many falling rentals as rising rentals in your district?—No, there are a great many falling rentals. But I do not think I can give your Lordship the figures for them.

24,760. Which are the premises in your district that fall; is it the factories, or the dwelling-houses, or what?—I should think a good deal of the increase in the rateable values is to be attributed to the factories that come into the place.

24,761. Then, it is the dwelling-houses that fall, if anything?—It must be the better class of dwelling-houses. I have a difficulty in answering that question, for this reason, our district is such a poor one. We have 55,000 houses rated at 20*l.* and under, we have 82,000 rated at 32*l.* and under; and over 100*l.*, I think we have scarcely 3,000 houses in our district.

24,762. I gather from what is before me, that you want to say something about Mr. Haward's evidence on the subject of purchase, but I profess I do not know what it is?—A great many statements were made in that class of evidence which appear to me to have been founded on a misapprehension of the real state of the facts. Mr. Haward says, purchase is desirable by an authority with a power to pledge the rates as a security.

24,763. What have you to say against that?—What I have already said in the beginning of my evidence in reply to questions from your Lordship. I say it is not desirable for the reasons that I then stated, because, if they pledge the rates, they must raise stock on which they would have to pay interest, and, as I have shown, I think they would be managing the concerns at a disadvantage as regards expense compared with what they are managed for now, and, consequently, they would have to raise a larger amount of money to pay for them.

24,764. Then you have nothing fresh to add?—No, I think not. Recalled,
Q. 24,755.

The witness withdrew.

Adjourned to to-morrow at 12 o'clock.

Sir H.
Knight.
6 Feb. '99

FIFTIETH DAY.

7 Feb. '99

Tuesday, February 7th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLORE, Q.C., M.P.
 Sir JOHN EDWARD DORINGTON, Bart., M.P.
 Sir GEORGE BARCLAY BRUCE, Kt., O.E.

ALFRED DE BOCK PORTER, Esq., C.B.
 Major-General ALEXANDER DE COURCY SCOTT, R.E.
 ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary*.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
 Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., M.P., appeared as Counsel for Kent County Council.
 Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

(Mr. Claude Baggallay.) Before you proceed with the examination of Sir Henry Knight, I was going to make a statement which I think may, perhaps, save you going through a great deal the statement of proposed evidence which Sir Henry Knight had sent in to you. I may say that a considerable portion of that statement naturally dealt with some of the evidence which had been given by the witnesses who were tendered by the London County Council dealing with matters of the capital expenditure, obsolete capital, and matters of that sort in the earlier part of this Inquiry. Sir Henry and I have talked this matter over, and we have come to the conclusion that a large amount of that evidence ought not to have gone unchallenged lest it should have been supposed that Sir Henry assented to it. He does not assent to it, but he agrees with me in thinking that that is really only material to be challenged, supposing such a possibility should ever arise as an arbitration taking place with regard to the value of the company on a purchase. If that does not arise, it is really not worth taking up your Lordship's time in dealing with the evidence. Therefore, Sir Henry is perfectly prepared, having said that he does not assent to all that evidence, to pass it by as irrelevant to the present inquiry. I have gone very carefully through his statement, and what I consider are the material points really for Sir Henry now to deal with are those under the heads Control and Consolidation, Demand Notes, and Supply per Head and Reservoir Capacity. Those, I think, it is material that Sir Henry should give his evidence upon, and it will not be very long. Of course, any other matters which your Lordship thought he ought to deal with he will be prepared to deal with, such, for instance, as the question of the revision of capital, which you will remember Mr. Gomme went into very fully at an early stage. Sir Henry does not want to trouble your Lordship with it, but he is perfectly prepared to answer that if your Lordship thinks he ought to answer it. I know on one occasion that your Lordship did say (it is under Question 21,075a) that that was a matter which the companies ought to answer.

(Chairman.) I think it is not wholly irrelevant to the main question that we have to decide, namely, the expediency of purchase, because the contention of the London County Council is that if you look at the capital account of these companies you see in reality that a great deal of it is so obsolete and so worn out and useless that it ought not to be earning a dividend; and therefore an arbitrator armed with

the proper powers would cut out that amount of dividend—at least, as I understand the contention—from the net income of the company.

(Mr. Balfour Browne.) Not exactly that; it might bear also on the question of control. As in 1852 the capital of the companies still remaining in possession was cut down, I can conceive that Parliament might again cut out the obsolete capital.

(Mr. Pember.) There was also a question of certain sums which the companies were more or less accused of wrongly putting to capital account.

(Mr. Balfour Browne.) I do not say, my Lord, that these companies can be bought upon capital value; it would be upon revenue; and the question of how that revenue was secured, of course, will arise, and then the obsolete capital might come in.

(Chairman.) I certainly understood the contention of the London County Council to go so far as saying that the revenue allotted to obsolete capital was no doubt legally allotted under the letter of the statutes.

(Mr. Balfour Browne.) My Lord, I do not think that is the argument.

(Mr. Pember.) There is also the fact that you must not lose sight of, that certain sums of 87,000*l.* in one case, 64,000*l.* in another, and in the case of the Southwark and Vauxhall 40,000*l.* were said to have been improperly included.

(Chairman.) Yes.

(Mr. Claude Baggallay.) Perhaps, my Lord, I may say this. If you examine Sir Henry Knight upon the subjects of Revision of Capital, and that question of the 40,000*l.*, I think it was, Control and Consolidation, Demand Notes, and Supply per Head and Reservoir Capacity, I think you will find that all the rest has really been covered over and over again. That, I think, my Lord, will really curtail enormously the amount of the labour which you will have to perform.

(Chairman.) I am very glad to hear it. At the same time there is a matter which I was going to cross-examine Sir Henry upon, which I think is not irrelevant—that is, the mode of payment for the companies in the event of purchase.

(Mr. Claude Baggallay.) Yes, my Lord, that comes in under the head of purchase, and that was the one you were dealing with yesterday. I was only dealing with the others.

(Chairman.) Now let us get on please.

Sir HENRY KNIGHT, re-called and further examined.

24,765. (*Chairman.*) You know it has been suggested to us that the payment ought to be made in cash or that the purchaser of the companies, if any, ought to have the option of paying for them in cash?—Yes.

24,766. What would you say to that?—If payment is made in cash, and the vendor is paid consequently what was considered to be the value of his holding, then the consideration arises whether that payment in cash would be sufficient to enable him to secure as good an investment as he has got at the present time, and to bring him in the same revenue.

24,767. That simply amounts to saying that the cash price ought to be so adjusted by the arbitrator as to bring him an equal income in an equally good investment?—Yes, and to pay the expense of re-investment, which, of course, would be nominal.

24,768. (*Mr. De Bock Porter.*) Assuming that to have been taken into account by the arbitrator, you have no objection to cash?—No, I do not think a man would object to take cash under those circumstances.

24,769. (*Chairman.*) Are the shares of these companies a trustee security at present?—Not at the present moment.

24,770. (*Mr. Claude Baggallay.*) The debentures are?—The debenture stocks are a trustee security.

(*Mr. Balfour Browne.*) The debenture and preference stock.

24,771. (*Chairman.*) Are the preference shares a trustee stock?—I believe they are so.

24,772. In all the companies?—I can speak for my own company.

(*Mr. Pember.*) They all pay more than 3 per cent.

(*Mr. Claude Baggallay.*) They are under the Trustee Act of 1893.

(*Chairman.*) Yes, I know that.

24,773. (*Mr. Mellor.*) Do trustees largely invest in your debenture and preference stocks?—Very largely indeed, in our debenture stock.

24,774. And in the preference stock?—And in the preference stock, I believe, as well.

(*Mr. Balfour Browne.*) The Trustee Act, my Lord, of 1893, says: if the company has paid 5 per cent. for 10 years.

24,775. (*Chairman to witness.*) I think, Mr. Haward advocated an alternative mode of payment, viz., cash at the option of the purchaser or an equivalent in Metropolitan Consolidated Stock?—Yes. If he had the equivalent in Metropolitan Consolidated Stock bringing him in the same income that he is getting now, I do not see that he would reasonably object.

24,776. But Consolidated Metropolitan Stock of the same character and amount would not appear to you to be satisfactory?—That would not be satisfactory, because he might possibly lose income.

24,777. What do you say to making the debentures redeemable as Mr. Haward proposed?—We have had some experience in these debentures which are redeemable, because the whole of our 4 per cent. reduced debentures are irredeemable, and when we were issuing that stock, the applications for it were very much larger than they are now. There is an inconvenience in issuing stocks which are redeemable at a certain value, as are those stocks that are now issued. They are terminable for 25 years from the date of issue. We find that many difficulties arise, and we find that that condition causes the applications for the stock to be not so numerous and so large as they were previously.

24,778. As for an irredeemable stock?—Yes.

24,779. Is there any difference in the market price of the two?—Yes, considerable, but we have no irredeemable 3 per cent. debenture stock; that is all redeemable. All our irredeemable stock is 4 per cent., so that, therefore, we cannot compare the two stocks exactly.

(*Mr. Claude Baggallay.*) The fact that trustees may not buy when they are above a certain premium also affects it if they are redeemable. Under the Trustee Act a trustee may not buy one of these debenture stocks when the premium is above a certain amount, or if they are redeemable within a certain number of years.

(*Witness.*) I believe that is the reason that accounts for the small number of applications for trustee purposes.

24,780. (*Sir John Dorington.*) Which limits the class of investors very much?—Yes, it does; in other words, as you have heard, it almost shuts out trustees.

24,781. (*Chairman.*) With regard to the results of Mr. Haward's estimate of the gross profit that would be available in 1901, I think that is all arithmetic which we can do for ourselves. Mr. Haward's calculation came to this, that the assumed increased income in 1901 would provide sufficient money to pay the interest and 60 years' sinking fund upon 30,900,000l.?—Yes, but I do not think he is correct in that; I do not think that would be so.

24,782. What do you say it is?—He estimates the gross profit available in 1901 at 1,300,000l., which, after paying interest on debentures and preference stock—

24,783. Not 1,300,000l., it is 1,030,000l.?—Yes, and I will show you presently how it is reduced to that. Mr. Haward estimates the gross profit available in 1901–2 at 1,300,000l., which, after paying interest on debenture and preference stocks, as estimated for that year, would leave 980,000l. available for interest on purchased capital and municipal sinking fund—adding to this 50,000l. for imaginary economies, he arrives at 1,030,000l. a year as the net income. This will be sufficient to pay the interest on purchased capital and municipal sinking fund as follows—

24,784. I have just put that to you; he makes out that there is enough to pay interest and sinking fund at 60 years on 30,900,000l.?—I do not agree with that.

24,785. What do you say is the right figure?—I was proceeding to give you my reasons for not agreeing.

24,786. Well?—I have not worked out what is the right figure. I have only dealt with his evidence. For 60 years it would be sufficient for a purchase price of 30,900,000l.

24,787. That is what I have now said three times?—The term usually allowed is 60 years, and, taking Mr. Haward's own estimate of the market value of the share capital of the companies at 30,883,135l., there is no margin for decrease in price to the consumers—these are the reasons why I do not agree with him—there would be no margin for decrease in price to the consumers, which is one of the suggested blessings of purchase, or for provision for the large unproductive capital expenditure proposed by the London County Council in bringing a supplementary supply from Wales. It would appear, therefore, that the increased cost to the consumer for many years to come is an actual certainty. If I fail to answer your question, I am very sorry, but it is the best answer I can make.

24,788. That was not my question in the least. You do not disagree with Mr. Haward at all; he did not draw any of those conclusions. However, do not let us discuss it. Do you agree that there will be 50,000l. economy by the purchase of the companies and putting them into one hand?—I do not know on what grounds it is stated, and I do not see how it can be substantiated.

24,789. We were given the details, you know, so much less for directors' payments, so much less for various other items of expenditure, coming altogether to something more than 50,000l.?—Yes, but you will have to set against that the increased expenditure which would follow from the management by a public body like the London County Council.

24,790. But why should there be increased expenditure?—As I ventured to show you yesterday, in the works that would be carried out. They propose to carry them out on a far more extravagant scale than the companies are doing at the present moment.

24,791. You mean to say the management would be more extravagant than the existing companies, because the County Council have intimated a desire to spend money in going to Wales—that is the argument, is it?—Scarcely that; it is because we judge from what they have stated, and, by inference, that they would expend a much larger sum of money than the companies would, and, consequently, they must make the management more expensive.

24,792. As to your interviews with Sir Arthur Arnold, I will only ask you this general question:

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Sir H. Knight. Was any sort of agreement arrived at between you and Sir Arthur Arnold?—Nothing whatever.

7 Feb. '99. 24,793. Did you express willingness to sell upon any terms that were mentioned?—No, I expressed an unwillingness to sell; and no terms were mentioned.

24,794. I do not think I have asked you yet—probably I have—your view about the sort of arbitration to which you think it would be right that the companies should submit if they were purchased compulsorily?—I think, in a word, the arbitration should be such an arbitration as has been customary in similar cases before. I see no difference between the water companies and other undertakings which have been purchased by arbitration; and I cannot expect anything more nor anything less than what has been customary.

24,795. (*Mr. Mellor.*) Do you mean two arbitrators and an umpire?—Two arbitrators and an umpire, I should think, would be better than one arbitrator; but I do not think myself that that is a material point.

24,796. (*Chairman.*) What you think material is, that it should be under the Lands Clauses Act?—I presume under the Lands Clauses Act, and the precedents that have been established by cases under that Act.

24,797. To return to your capital account for a moment. You have no item in your capital account for depreciation?—No. No item is necessary.

24,798. I want you to explain to us why you think no item of that sort is necessary?—Because every particle of our machinery, no matter of what description, is kept thoroughly up to the mark every year. Every repair that is necessary is done, and the company is in full and efficient condition always, and all the expenses so incurred in keeping it in that efficient condition are paid out of revenue.

24,799. (*Mr. De Bock Porter.*) In superseding one main for another, supposing your district is largely extended, the whole cost of the new main is at present charged to capital, is it not?—No, I beg your pardon. If we replace a 5-inch main by a 9-inch main, the cost to capital is the difference between the capacity of the 5-inch and the capacity of the 9-inch only. That is a fair charge to capital, because it represents the amount of pure gain.

24,800. And the other part is charged to income?—The cost of the 5-inch main, when laid originally, would have been charged to capital.

24,801. But I say that the deduction which you make from the new main is charged to income?—No, I do not quite follow.

24,802. The amount of the difference between the two?—The difference between the capacity of the 5-inch and the capacity of the 9-inch main is charged to capital.

24,803. (*Sir John Dorington.*) That is to say, the 9-inch main costs so much, and you deduct from the proportion of that amount which you charge to capital what would be the cost of laying a 5-inch main?—That would be something like it.

24,804. The cost of laying a 5-inch main would be deducted from the total cost of the 9-inch main?—As regards the payment to be made to capital; but the value of the original 5-inch main is contained in the 9-inch main, and has been previously charged.

24,805. The old 5-inch main is taken up and gone. You lay a 9-inch main which costs just as much as laying a brand new main will cost?—Yes.

24,806. But you do not charge the whole of that cost to capital, as I understand?—No, certainly not.

24,807. You deduct from it what will be the value of putting down a new 5-inch main?—We deduct from them the value of the 5-inch main, certainly.

24,808. And that part of the cost goes to maintenance?—That has been in capital, and is still kept in capital.

20,809. No; the old 5-inch main has become obsolete?—Yes.

24,810. It is only old iron?—Yes.

24,811. And you take it up?—Yes.

24,812. And you lay a new 9-inch main?—Yes.

24,813. And the new 9-inch main costs any amount that you like more than the old 5-inch main?—Yes.

24,814. But you deduct from the proportion of the cost of that 9-inch main which you are putting down so much as would represent the cost of replacing the old 5-inch main by a new 5-inch main?—Yes.

24,815. And that goes to maintenance?—No; excuse me.

(*Chairman.*) Then it all goes to capital?

24,816. (*Sir John Dorington.*) Then it all goes to capital?—It all goes to capital because the 9-inch contains the capacity of the 5-inch, and the capacity of the 5-inch has been charged to capital. Therefore, if you charge the capacity of the 4 inches to capital, you get the capacity of the 9 inches charged to capital; the 5-inch remains in the 9-inch.

24,817. The 5-inch main does not remain inside the 9-inch main because you have taken it away; it has become obsolete?—The capacity of it is in the 9-inch main.

(*Mr. Pember.*) May I come to the rescue? I think this explains it —

(*Chairman.*) No, Mr. Pember, please leave the witness in our hands.

24,818. (*Mr. De Bock Porter.*) Do you say that the whole cost of the new 9-inch main is charged to capital?—No.

24,819. (*Chairman.*) Then where is it charged to?—It will have been charged to capital in the long run, because when the 5-inch was laid, that was charged to capital; we enlarge it to a 9-inch, and we charge the capacity of the 4 inches. Therefore the whole 9 inches is charged to capital.

24,820. (*Mr. Mellor.*) When the 5-inch main wears out, a certain proportion of that capital is gone in that case?—No, because it is contained in the 9-inch main.

24,821. No, excuse me, I put it to you that the new 9-inch main that you lay will wear out in time?—We have never known of a main wearing out.

24,822. Surely you do not mean to say, that after 20 years' use that main is as good as it was the day it was put in?—Our experience teaches us, that after 80 years' use the main is just as good as it was when it was first put down.

24,823. Then I may take it from you that a main never wears out?—Practically you may say so, unless it is cracked by a frost or anything of that sort.

24,824. I want to go from the mains on to the buildings. You have no depreciation fund for your buildings?—No.

24,825. Why not?—Because they are always kept in perfect repair.

24,826. A thing kept in perfect repair is not so good as a new thing, is it?—For the purpose for which it is required it is as good as though it was new.

24,827. I do not quite understand this. Why, then, do all the manufacturers in the kingdom have a depreciation fund for their mills and their buildings?—I do not know their reason, but it may be, possibly, because their mills or their buildings are held on a lease, and consequently there is a depreciation, a waste, which must be provided for.

24,828. I mean in freeholds. You know the way in which the accounts are made up with regard to freehold mills or businesses of that character, there is always a depreciation fund in all that I have ever seen. Of course, your experience may be much greater than mine, but I have had some experience in the matter, and I have never yet seen one without a depreciation fund. Is not the use of the depreciation fund in order to keep that building, as it were, as good as new, that is to say, that however much you may repair a thing, it will wear out in time; that is to say, it will get of less and less value, and if you want to keep up your capital to its proper level, you ought to have a depreciation fund—is that not so?—I am very sorry, but I cannot agree with you, because it is a very different thing. A building used for the purposes of a water company being kept in constant repair is always considered as good as new, and therefore there is no depreciation, as there is nothing allowed to get out of order. For instance, suppose the roof became deficient and rotten, and had to be replaced, it would be replaced at once and the cost charged against revenue, and you would have as good a roof as you ever had when you commenced.

24,829. (*Major-General Scott.*) Take the case of working machinery; however much you may make good the defects in an engine, does not the time arrive when you have to take that engine away altogether, and it becomes merely of the value of scrap iron?—If that were

the case, and the engine were taken away altogether, and a new engine put in its place, the charge to capital would only be that excess in power and value of the new engine beyond what was taken away.

24,830. And what becomes of the rest; is the other portion of the cost of the engine charged to revenue?—That is contained in the new engine, which is not charged to capital.

(*Major-General Scott.*) I cannot follow that.

24,831. (*Chairman.*) Let me try and put an example, we will come back to the mains, if you please. Supposing you lay down Main A, which is costing 1,000*l.*, you put that 1,000*l.* to capital account?—Yes.

24,832. It thenceforward appears in your capital account, and earns dividend?—Yes.

24,833. There comes a time when you want to replace that Main A by a Main B?—Yes.

24,834. And that costs you 2,000*l.*; you do not remove from your capital account the 1,000*l.* that represented Main A?—No, because we only charge the capital account with the surplus cost of Main B.

(*Mr. Pember.*) Do just answer the question.

24,835. (*Chairman.*) Do answer. You do not remove that 1,000*l.* from the capital account?—No.

24,836. But main A disappears?—Yes.

24,837. And there is nothing left but main B?—Yes.

24,838. For which you have to pay 2,000*l.*?—Because it is worth 2,000*l.*

24,839. Where does that 2,000*l.* with which you pay for main B come from; does it come from revenue, or does it come from capital?—1,000*l.* of it would come from revenue, and 1,000*l.* of it would come from capital.

(*Mr. Pember.*) That is what I wanted to say half-an-hour ago, and I was not allowed.

(*Chairman.*) That is what we have been trying to get from Sir Henry some half-an-hour ago, and he kept on telling us no, the difference between the cost of the new main and the old main was not paid out of revenue because it was somehow or other contained in the new main.

24,840. (*Major-General Scott.*) In the case of the old engine I was referring to, I did not understand you to say that any portion of the charge of the new engine that replaced the old one was defrayed out of revenue?—I think the answer to that was the one which I gave, and which I still think is right, I do not know whether I can make it more clear, but I should be very happy to do so if I can. I can only say that every engine is kept in perfect repair.

24,841. (*Chairman.*) No, that is not the point; you put down a new engine instead of an old one, the old one having cost you 1,000*l.*?—Yes.

24,842. The new one costs 2,000*l.*?—Yes.

24,843. How do you pay the 2,000*l.*?—1,000*l.* is charged to capital; and the other 1,000*l.* not being charged to capital is contained in the new engine, and I do not know whether—

24,844. "Is contained in the new engine"; how is it paid for; is it paid for out of revenue, or is it put to capital account?—The deficiency would come out of revenue, of course.

24,845. Does it; you really seem so doubtful about it; it would be so easy to say if it was?—I can only say that our system is that—we never charge to capital anything we do not get a representative asset for.

24,846. (*Mr. Lewis.*) Let me put this question to you in connexion with what his Lordship has referred to. Suppose the old pipe had only cost 500*l.* and the new pipe had cost 2,000*l.*, what would you put to capital account? That 500*l.* represents capital?—Yes.

24,847. The new pipe costs 2,000*l.*, how much of that 2,000*l.* would go to revenue, and how much to capital?—1,500*l.* would go to capital.

24,848. (*Chairman.*) And would the 500*l.* be paid out of revenue?—Yes.

(*Mr. Claude Baggallay.*) Less the value of the old iron, if it would fetch anything for old iron.

(*Chairman.*) I suppose the price of old iron comes into the receipts?

24,849. (*Mr. Mellor.*) I should like to ask you another question with regard to this. Suppose you take up a main which costs 1,000*l.*, and you put down another main of the same value, 1,000*l.*, how is that 1,000*l.* paid?—In that case there would be no charge to capital at all.

24,850. None whatever?—No, because we only get the same, unless the main gave us a larger asset in value, that is to say, a larger capacity, a larger power than the old main.

24,851. Do you know anything about the management of a gasworks?—No, I do not.

24,852. (*Chairman.*) I suppose there are some of the works that your company has had from the beginning that have been abandoned and not replaced?—I cannot call to mind any—not since 1852.

24,853. Take 1852; have you not got pumping works at Seething Wells that are now practically useless?—No, that is not our company; that is the Lambeth Company.

(*Mr. Claude Baggallay.*) Certain works were abandoned when the company, under the 1852 Act, had to go up above Teddington, but since then they have always been at the same intakes.

24,854. (*Chairman.*) Let us take that example. What was abandoned in 1852 when you had to go above Teddington?—Simply the intake at Battersea.

24,855. What amount of capital had been expended in making that intake at Battersea?—I cannot tell you.

24,856. About; approximately?—I may say, although that intake was abandoned as an intake, it was not obsolete, and has not become useless. It is used now, at the present day; but instead of being used as an intake, it is used as an outfall for the sand-washing water and other things from our filter beds at Battersea. It is not obsolete; it is used for another purpose; it is still there, and still useful.

24,857. (*Mr. De Bock Porter.*) In making this division between capital and income, I presume the company does it, and then submits it to the auditor, whose decision is final?—The allocation of every payment is, first of all, done by the engineer; that is examined by a sub-committee of the board and passed. After it has been so examined, it is then again re-examined by the auditor before it is finally passed. I do not myself think it is possible—in fact, I am sure, during my connexion with the company it has not been possible that anything whatever could be charged to capital for which we did not have a corresponding representation in our assets.

24,858. (*Chairman.*) Yes; but you see all our questions are pointing to what becomes of items in your capital that represent an asset that has either disappeared or has become useless?—I think it is all contained in those very apt illustrations which were made about the mains; and that is, if a main costs 2,000*l.*, and 500*l.* represented the original amount, 1,500*l.* goes to capital and 500*l.* to revenue; that is the general procedure.

24,859. (*Mr. Mellor.*) What would you say with regard to a building that is worn out and tumbled down—a building that you do not renew?—We have not such a thing in existence, and I do not know of any building that we have that is likely to get into such a state.

24,860. I am not suggesting that any of your buildings at the present moment are in that condition; but in the process of time, if you continue this system, a building might wear out?—If the building tumbled down, we should rebuild it again and charge it to revenue.

24,861. Supposing you did not want to rebuild it, or wanted to build it up somewhere else, or not to build it at all, what would you do then?—In that case we should have to look into the question, and we should see whether the building had become useless and had been allowed to fall into decay and tumble down; then, in that case, it would have to be written off capital, no doubt.

24,862. (*Chairman.*) Would it? Has ever such a thing happened as writing off from capital?—No, I have not recollected such a thing.

24,863. Then I do not see how it can be done, because your capital is in the hands of shareholders,

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and which shareholders are you to come upon?—That is just the point in my own mind, and I was going to mention it. We do not know which shareholder holds these particular shares which represent that building, and how are we to write it off?

24,864. Exactly; but there comes in the criticism, you know, of your friends, who say diligent inquiry would soon ascertain how much was to be written off this dividend-earning capital?—I cannot imagine the case put by the Honourable Commissioner, Mr. Mellor. That does not appear to me to be a case that it is possible would arise, and if it did arise, and a building had to be sold, whatever it fetched would be credited to capital.

24,865. What do you mean—that new shares would be issued to represent that amount?—No, you would have to reduce your capital by that amount, that is our custom. For instance, we have sold land at Battersea, and whatever that land has fetched has been written off the capital account.

24,866. (Mr. Mellor.) Yes, but that does not quite answer the objection. The objection is this, that you have no depreciation fund. You say very truly that capital may be represented by Mr. A.'s shares, and we cannot take away his shares, and therefore we cannot strike it off capital; but if you had a depreciation fund, you would be able to apply your depreciation fund to make up the deficiency, and that is the reason that the questions have been put to you. You see what I mean?—Yes, exactly.

24,867. Otherwise, you see it may be said of you that you are living to a certain extent on your capital by not putting by a certain sum every year to represent depreciation of buildings and other things?—If it were so, if it were necessary to be done, it would be a very small amount indeed which would satisfy the requirements.

24,868. (Mr. Lewis.) When you realise this land that you have referred to, how could you apply the proceeds in reducing your capital?—We simply diminish the capital account by that amount.

24,869. How would the shareholders treat it? What shareholders have to suffer? If you reduced your paid-up capital, some of the shareholders would have to be abandoned?—It is done in this way; the amount so realised would be expended on new works without any charge to capital.

(Mr. Littler.) Your Lordship will remember that companies are not bought on their capital value but on their income. It is so many years' purchase of their income, not their capital value. If the capital value is worth a million, they would only be bought on their income—they are not in the least degree bought on their capital. I know there is no railway company, and I do not believe there is any gas company, and certainly there is no water company, that ever has a depreciation account, because they go on from year to year replacing one thing in one year and in another another.

(Mr. Pember.) Railway companies never write off anything.

(Mr. Littler.) So I say.

(Mr. Pember.) And docks never write off anything.

(Mr. Littler.) And the railway companies were held in the Court of Queen's Bench to be right in not doing so.

(Witness.) That is really the way it works. We write those receipts off—we use them for erecting new works, the value of which is not charged to capital.

24,870. (Mr. Lewis.) Are there any regulations laid down for your guidance in dealing with an expenditure of that kind, I mean in an Act of Parliament?—In connexion with one. I can only recollect in one of our Acts of Parliament recently—whether it was in 1886, or not, I am not quite certain—but there the question was raised as to the sale of our land at Battersea. There Parliament enacted that all the money received for the sale of that land at Battersea should be used as a portion of the debenture capital they authorised us to raise in the construction of the new works. In consequence, that money would be used in the construction of these works, and would not increase the capital account for these works.

24,871. But there are no general regulations of that character?—I do not know of any other regulations than that.

24,872. (Chairman.) I do not quite understand; you were authorised to raise a certain amount of debentures for certain new works?—Yes.

24,873. On the other hand, you had an asset in land at Battersea that you were able to sell and get rid of?—Yes.

24,874. Was the amount that that land fetched to go in reduction of the amount of debentures that you were entitled to raise?—Yes, and would be used for constructing the works which that debenture money would have enabled us to construct.

24,875. (Mr. De Bock Porter.) Would it be treated as debenture capital and subject to the payment of a sinking fund?—That varies according to the different Acts of Parliament. This sinking fund has a long history now, although it is recent, and it has been altered several times.

24,876. There was a statement made in the course of examination with reference to an asset that you are likely to have at Battersea of some 300,000*l.*?—I do not know what amount.

24,877. Roughly?—For obvious reasons, I have never fixed any amount.

24,878. Say 200,000*l.* or some round sum of that kind. Would that sum be treated as debenture stock, and used by the company in doing the work which it would otherwise have done by debenture stock, and if so, would it become chargeable for the payment of sinking fund?—This is the Act of Parliament regulating that:—"So soon as the company shall be enabled to abandon the use of their works at Battersea in the county of London, and shall sell and dispose of the lands and works there situated and owned by them, the money received by the sale of these works or any part thereof, shall after payment of all incidental expenses be applied by the company to the purposes of this Act and for the general purposes of their undertaking, being in all cases purposes to which capital is properly applicable."

24,879. (Chairman.) That capital so applied would not be earning interest, and would not be a debenture in anybody's hands?—No.

24,880. (Mr. De Bock Porter.) And would not make any payment to the sinking fund?—No, that would not of course.

(Mr. Claude Baggallay.) It is a question of the law, of course, into which I have just been looking, and I do not think in respect to the proceeds of the sale of those lands that any contribution would be made to the sinking fund—but that is a matter that would have to be looked into rather carefully.

(Sir John Dorington.) It would lessen the amount of capital that would have to be raised in the form of debentures for that particular purpose; that is what would happen.

(Mr. Claude Baggallay.) Yes, it takes off so much of the capital amount that could be raised; and the capital amount which could be raised included not only the debenture stock, but the premiums: the premiums are included in the total amount.

24,881. (Major-General Scott to witness.) The new works constructed by the proceeds of the sale replace the land in the assets; that is what would happen?—Yes, that would be so.

24,882. (Chairman.) The drift of all these questions we have been putting to you is something of this kind: Granted that probably, in the event of purchase, an arbitrator would look at your income; on the other hand, it is said, yes, but some of that income does not represent existing capital; it represents capital that was originally expended in good and efficient works, but those works are now either worn out or they are obsolete, or they are abandoned, or they are not valuable, and therefore there is a certain amount of apparent capital earning this income which the purchaser will not get—it is gone?—Yes, but if that were so, you have got to put against that the increased value of some of your properties—for instance, the increased value of lands bought years ago. If you are to deduct for one, you must add on for the other.

24,883. Very well. I mean, do you concede that it would be right to make a deduction for the one; that, in considering the income of the company with a view to ascertaining what price ought to be paid for the company, it would be right to consider whether or not that income is derived in respect of shares—that is, of

capital which is now obsolete or destroyed?—That would be a question which I should say would require very great consideration, and is open to considerable argument.

24,884. (*Mr. Mellor.*) You have not quite dealt with my Lord's question. Really, what I want to know is this: You say it would be unfair not to consider the increased value of the land. Very well; as it seems to me, according to your theory, the arbitrator would take your land at its increased value, but then you want him also to take all your mains and everything at the original value—that is the value at which you put them in?—And I still maintain—I am very sorry to repeat myself so often, because I am afraid it must be tedious, and I do not want to be tedious—I still maintain that our system of keeping everything in thorough repair does away with any depreciation of that sort.

24,885. Of course, I only wanted to know your opinion?—What I say further, in a word, is, if it is fair to write off something for depreciation, it is also fair to write on something for a rise in value.

24,886. Granted; but still, in saying that, you do not answer my question. I say it may be fair to take the land at its present value; then, if you do that, you ought to take the mains and everything else at their depreciated value—that is, at their present value?—If there is a depreciated value, certainly.

24,887. (*Mr. Lewis.*) Is not your contention this: that it is not very material to you what the exact value of the property—that is, of the buildings and the mains and so on—may be in arriving at your capital; but what the property as it exists will produce. If you have got something in existence that will produce a certain income, and that income is pretty well secured, that should be the basis of the value of the property?—Yes, that appears to me to be right and proper, and, as the learned counsel has just now said, there is not the slightest doubt the purchase will be on income and profits, not on capital expenditure.

24,888. (*Mr. Mellor.*) Have you any either annual or quinquennial valuation of your property?—No.

(*Mr. Claude Baggallay.*) I take it that the purchase would really be at the present value, no matter what capital has been expended, or what the capital stands at; and the present value is gauged by its earning capacity. If the land at Battersea has enormously increased in value, as it might have done, so much the better for the purchaser. With regard to the sinking fund, I say, sir, in answer to your question, that the last paragraph of section 13 expressly makes this money not liable for the sinking fund, and if the land is sold subsequently to the debenture stock having been raised and becoming liable to the sinking fund, then the money is to be applied in redemption and cancellation of the proportionate amount of debenture stock, and the contribution to the sinking fund is to be proportionately reduced.

(*Witness.*) Another thing occurs to me in reply to a question of one of the Honourable Commissioners: As regards these works, which are created out of the proceeds of the sale of the Battersea land, we will say, those works tend to earn a profit, and consequently they would tend to increase the sinking fund, because they are works earning a profit for the company on which the company is paying no interest, and therefore it would tend to increase the average profits which affects the amount to be paid to the sinking fund.

24,889. (*Chairman.*) You say that this land at Battersea is the only item of capital expenditure which you can refer to in connexion with your own company which is obsolete—as it were abandoned?—It is not abandoned yet.

24,890. No, but it is going to be, is it not? You are going to sell it?—We are going to abandon it as soon as ever we can do without it.

24,891. The point of my question was: Is there any other part of your capital, except that which you regard as having become obsolete?—Nothing occurs to me at present.

24,892. Take your buildings, your engine houses, and so on; you say you keep them in good repair?—Perfect repair.

24,893. Do they stand in the valuation lists of the different parishes at the original amount, or have you had the amount reduced from time to time?—There has been no occasion ever come under my knowledge

where the amount of the assessment has been reduced. It is continually being increased; every quinquennial valuation the assessment is constantly increased.

24,894. Do you mean that your buildings stand in the valuation lists at their prime cost?—They stand at the figure which has been placed upon them by the different rating authorities. I do not think prime cost enters into the calculation at all in making the assessments.

24,895. What I want to know is, have the assessments remained the same from the day those buildings were put up down to the present time?—The buildings are not assessed separately, as far as I know. The undertaking in certain parishes is assessed, that is, the whole of the undertaking in that particular parish.

24,896. That includes buildings and mains?—Yes.

24,897. And I suppose plant—fixed plant, at any rate?—Yes.

24,898. And so on?—Yes.

24,899. Has the original valuation that was put down in the assessment lists remained unaltered, or at least undiminished?—I cannot speak as to the details, but the whole sum has increased constantly.

24,900. (*Mr. Mellor.*) That is because you have been increasing your machinery and adding to your mains?—Increasing the machinery and increasing the amount of revenue derived from the particular parish. I cannot give your Lordship the details of how that assessment is made up.

(*Mr. Claude Baggallay.*) The assessment of water works property is always on the income—on the revenue producing capacity of the waterworks, and not on the works.

(*Mr. Balfour Browne.*) Forgive me, the buildings are assessed separately always.

(*Mr. Claude Baggallay.*) The buildings are, but I am speaking of the mains and the ordinary distributing works and the storage works.

(*Mr. Littler.*) The buildings are taken on the present value of the land, not what it would cost 50 years ago.

(*Mr. Pember.*) Surely if they are assessed separately, it would be very easy to see what they are assessed at to-day, and what they were assessed at 12 years ago.

24,901. (*Chairman.*) Yes, but the point of my question was to know whether any depreciation in the assessment of your buildings takes place because they become old buildings?—We get no details at all of the assessment; the assessment is based on revenue.

24,902. Not the assessment of the buildings?—The engineer advises me there is a sum attached to the buildings.

24,903. Of course there is?—But we do not get that figure; we do not know what the assessment committee put these buildings down at.

24,904. Do you send anybody to the assessment committee to say, "These are old buildings; you must not assess them so high"?—No, the operation is this: the assessment list is made out, and if we think it is excessive, as we mostly do, we always send and oppose and try to get it revised.

24,905. On the ground that they are old buildings?—No; on the ground that it is an excessive assessment of the value of the property that is there.

(*Mr. Littler.*) In 99 cases out of 100 the buildings get agreed before you get to a valuation. In rating cases the great difference is as to the question of the income derived from the water, after deducting the proper sum for working expenses and the proper tenant's profits. In 99 cases out of 100 the two valuers go over the buildings and come to the same opinion.

24,906. (*Chairman.*) Yes; but what we were upon was whether that opinion allowed for the depreciation of the buildings. There is no depreciation in the capital statement, is there—a depreciation in the assessment? (*To the witness.*) Have you leaky mains in your system?—At the present moment I do not think we have one. We cannot have a leaky main. It would be utterly impossible to carry on business, because directly a main commences to leak it creates difficulties and troubles, and we have to see to it immediately. Directly it is discovered, I should say within

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24 hours, it would be replaced by a new one, except in the case of the great frost two or three years ago, when the mains had to remain as they were until we could get labour to repair them. All over the country there were so many mains burst then that we had to wait until we could get workmen to put on to the job to repair them.

24,907. We heard that last year you gave as much as six million gallons a day to the East London Company?—Yes.

24,908. Were your mains in a condition to stand the pressure of that extra quantity of water?—Yes, certainly, and I do not recollect that we had a single case of giving out; we did not have a single case, and the head was increased 50 feet, the engineer informs me.

24,909. In fact then, to sum up, you see no ground whatever for revising your capital account?—I do not, indeed.

24,910. Before I leave the question of purchase, have you given your mind at all to the suggestions that were thrown out by Mr. Banbury?—Yes, I have.

24,911. Will you say what you think about them?—To use his own words, I think that is a very rough and ready scheme, and in order to make it just and workable, the roughness and readiness of it would have to be very much mitigated. If I recollect right, he proposes to give us a stock bringing in the same income as our ordinary shareholders get for their present investment.

24,912. Yes?—Then I think for prospective value, he says all that need not be considered at all, because the extra value of the stock I am giving them ought to satisfy them for prospective profits and also for a *douceur* for compulsory purchase. I think I am right, but I dare say that your Lordship will tell me whether I am right or not.

24,913. He made it a stock bearing a lower rate of interest than your present stock; a trustee stock, transferable at the Bank of England, and therefore having a higher capital value than your stock would have?—He capitalised the present income; but as I said before, that is rough and ready, and it would work a very great injustice if those things which he leaves, as it were, to adjust themselves, such as prospective value, and things of that sort, were not properly threshed out, and a proper sum allocated for them. I think as to taking the income as it then stood, as the basis, that it would be unfair to take the income for the year 1897, without adding to it such a sum as would represent the diminution consequent on the great frost of 1894. Also 10 per cent. should be added for compulsory purchase and the value of the back dividends; and the prospective value of future dividends would be accounted for.

24,914. Ten per cent. added to what—to the income?—Ten per cent. should be added for compulsory purchase.

24,915. To the income?—No, to the payment.

24,916. To the capital?—Yes, to the payment for the purchase.

24,917. It would be more than 10 per cent.?—I think your Lordship went into that pretty closely yesterday, and your Lordship thought it was not necessary to refer to it any more.

24,918. No, we are now upon a different system. We are now discussing a scheme which was to give you the same income as you have now—but a greater capital value—a capital value exceeding the present capital value of your shareholders by certainly 10 per cent., or more; and the suggestion was that that increase in the value of the capital was quite enough to compensate for compulsory sale, and possibly prospective income?—That is the point where I venture to differ. I think that ought not to be left to that haphazard way, but that the whole prospective value ought to be ascertained and properly arrived at.

24,919. (Sir John Dorington.) In fact, you want an arbitrator?—There ought to be an arbitrator, no doubt.

24,920. (Chairman.) It would save you a great deal of money, and a great deal of trouble?—He says they are points which can be settled without an arbitrator; but I do not agree with him. All these points ought to be settled by an agreement, or by an arbitrator after hearing the whole case.

24,921. (Mr. De Bock Porter.) You would rather run the risk of arbitration than have an assured income in a stock which would be worth 10 per cent. more?—I think so, or else I have to run a danger of doing a very great injustice to the shareholders.

(Chairman.) You know exactly what you are doing if you could come to any agreement about a scheme of that kind; whereas, if you go into an arbitration, you are rushing into the dark.

(Mr. Pember.) There has always been this difficulty about Mr. Banbury's scheme, my Lord, if I may point it out to you, that there is no security for the income after sale. For instance, it was to be secured on the water rate; but supposing that the London County Council thought it right to reduce all the rates to the lowest level, there would be a loss, as far as Mr. Haward or Mr. Gomme went, of 161,000*l.*, and as far as Mr. Goldney calculated, applying it to all the eight companies, a loss of about 240,000*l.* a year, if I remember aright. Supposing the London County Council did that, and reduced the income for a time, at all events, by 240,000*l.*, what becomes of the security of Mr. Banbury's stock?

(Mr. Claude Baggallay.) There is no security, they could reduce the rates to any extent.

(Mr. Pember.) Mr. Banbury, it is quite true, as somebody reminds me, said if there was not enough to pay the interest he would raise the rates; but I am putting the undoubted right of the London County Council, or anybody else who bought—I do not want to suggest any villainy, or anything of that kind, but I am putting their undoubted right to carry out what seems to me to be Mr. De Bock Porter's opinion, that the rates should be adjusted, and supposing they adjusted them in the way of reducing them to the lowest level, there would be a loss of a quarter of a million a year.

(Chairman.) Yes, but they would not be able to adjust them unless their income was sufficient to pay the income guaranteed.

(Mr. Pember.) Why not? They might if they like. They would not care twopence about being insolvent.

(Mr. Balfour Browne.) If my learned friends are prepared to dispute Mr. Banbury's scheme, I am not going to argue in favour of it.

(Mr. Pember.) It is not curs; I do not know who put Mr. Banbury into the box.

(Mr. Balfour Browne.) Who did?

(Mr. Pember.) Heaven only knows.

(Mr. Claude Baggallay.) He put himself in; it was spontaneous.

(Mr. Balfour Browne.) Your Lordship asked Colonel Lockwood if he approved of it, and he said, yes.

(Mr. Pember.) No.

(Chairman.) Yes, Colonel Lockwood did.

(Mr. Pember.) Colonel Lockwood gave his own version of it.

(Mr. Balfour Browne.) However, I am not going to set it up, I assure you.

(Mr. Pember.) I do not care whether it is set up, or whether it is not.

(Chairman.) It would be a great blessing to the contending parties if some scheme could be devised in which both could agree.

(Witness.) If it were devised on just principles, there would be no objection.

(Mr. Pember.) I am only concerned to point out what I consider is a great flaw in the scheme—

(Witness.) The learned counsel has very well pointed out a very serious objection to it.

(Chairman.) Forgive me for saying that that objection of the learned counsel could not occur, because the scheme would not permit the purchaser to lower the rates so as to produce an income insufficient to pay the income he promised to pay.

(Mr. Pember.) There was no limit of that sort in the scheme.

(Chairman.) Yes.

24,922. (Mr. De Bock Porter.) Assuming means could be devised by which the income could be absolutely assured, does that do away with your objection—your objection, you know, to be purchased?—Yes, as far as regards the present income.

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24,923. (*Chairman.*) You say it is not enough to give the present income, but you ought to give more than the present income, because of the prospective value?—You must give more than the present income, because you must give something in lieu of the prospects. You must give more than that, therefore. There is another reason why it would work so unjustly on the present income as between the companies. Some of the companies have arrived at their 10 per cent. and have paid their back dividends, like the West Middlesex.

24,924. Of course, the West Middlesex could not get prospective value under that?—Very well; then that company would receive all it could possibly claim, because it has no prospects before it of increased income. But take my company, the Southwark. It has not arrived at that position, and has not paid its back dividend; the scheme of Mr. Banbury would shut it out from all that advantage. Why should I be treated worse than the West Middlesex?

24,925. Because you have not been so successful in the past, and your undertaking is not so good a thing?—But, surely, I have got prospects before me, and the West Middlesex has none.

24,926. You have also the prospect of a possible decline?—I do not quite see how that is to occur, looking at the prosperity of our district and the way it is constantly increasing. There is only one other objection, and that is to his idea of taking a certain year as a basis. That would manifestly be unfair. The only basis that could be arrived at would be a basis which was decided by the arbitrator after hearing all that could be said on the question. That would be a fair basis to arrive at.

24,927. You prefer the risks of arbitration to a bird in the hand?—Most certainly I do in that case, unless the arrangement could be made quite satisfactory to us.

24,928. (*Mr. De Bock Porter.*) Have you looked at the arbitrations that have already taken place, and the results to the holders of the stock in the various undertakings which have been sold?—No, I have not.

24,929. I do not think that they have the income absolutely assured to them in perpetuity?—I cannot give you an opinion upon that point.

24,930. I understand you no longer wish to go into this question about your expenses of management, whether they are starved or not?—Only to contradict emphatically, in the case of my own company, that there is any foundation for making such a charge.

24,931. Very well, you say you do not starve your management?—No reasons were given for such a statement.

24,932-3. I think there was some charge against you of having put some improper sum into your capital account. I think I ought to get your view about that. Mr. Gomme alleged that you had included in your capital expenditure a sum of 40,481*l.* in excess of the amount allowed by Parliament; what do you say to that?—I must first of all deal with what Mr. Lee said before Mr. Beckett's Committee in 1852. Mr. Lee clearly stated that his figure of 400,000*l.* was money actually expended up to 1852, and represented existing works, and also that in arriving at that figure he had excluded non-existent works. These non-existent works he described as land at Vauxhall and Kennington which had been sold. If he had not excluded this property, he says that the whole sum expended would have been 423,600*l.*, which was the capital raised. I do not know whether the Commission will wish to further consider this question in view of the subsequent admissions of Mr. Gomme, and also in face of the fact that Parliament has approved the capital of the company from time to time. The questions raised refer to such a remote period that it is only possible to deal with them by conjecture. I dissent from Mr. Gomme's assertion that certain sums specified by him are improperly included in capital expenditure. In 1845 Parliament fixed the value of the undertaking at 346,000*l.*, viz.: share capital considered as paid up, 276,000*l.*, and existing loan capital secured by mortgages, 70,000*l.*, making a total of 346,000*l.*, and behind this I do not propose to go. All monies received by the sale of the abandoned works referred to by Mr. Gomme have been duly credited to capital, and all we have to show is that the company duly credited capital with the amount. Mr. Gomme is evidently not aware that the net proceeds of the sale of this Vauxhall

and Kennington land, amounting to 21,581*l.* 6*s.* 2*d.*, were duly credited by the company to capital, and consequently capital expenditure was relieved to that extent. Mr. Gomme says we ought not to include in our capital expenditure any non-existent works; we agree, so far, and such of those works which were sold were duly excluded from the capital expenditure. There remains, however, Mr. Gomme's other item of 16,932*l.* This is based on an item of 292,932*l.* given by Mr. Lee, as already stated.

24,934. You have already stated that; what did Mr. Lee state with regard to that 292,932*l.*?—The capital expended in 1845, as stated by Mr. Lee, was 292,932*l.*, and the capital fixed by Parliament in 1845 was 276,000*l.*, the difference being 16,932*l.* With regard to Mr. Gomme's other item of 16,932*l.*, this is based on an item of 292,932*l.* given by Mr. Lee, as already stated, and is in regard to expenditure prior to 1845. A perusal of Mr. Lee's evidence in 1852 will show that the Committee had great difficulty in understanding what Mr. Lee meant by his 292,932*l.* My answer to Mr. Gomme is—We will not go behind the Act of 1845, which is practically the commencement of the Southwark and Vauxhall Company. There was then no doubt a proper inquiry, and Parliament fixed the capital at its then value, and the figure fixed by Parliament was accepted as the capital expended at the time of the constitution of the company. Further, as all expenditure to 1852 was included in Mr. Lee's figure of 400,051*l.*, which Mr. Gomme accepts, and as the greater necessarily includes the less, surely the only item to be explained is that already dealt with, viz., 23,549*l.*

24,935. It is not very easy to follow all that—it is a little complicated; but as I understand your answer to the 23,549*l.*, is what—that it was sanctioned—or what is your answer—I really cannot gather the effect of all you have been reading?—It was credited to capital.

24,936. It was credited to capital?—That is my answer.

24,937. And therefore the dividend bearing capital was diminished by that amount?—Certainly.

24,938. And as to the 16,932*l.*, you say you rely upon what Parliament did?—Yes, and that it is so long ago that we cannot go into it. We decline to go into it now. It was all settled by what Parliament did, and they settled it then, with, no doubt, ample evidence before them, and were the best judges of what was the proper thing to do.

(*Mr. Pember.*) At all events it seemed to have been knocked off by Parliament in 1845.

(*Chairman.*) I really cannot gather from all this what was done with it—whether it was knocked off, or not knocked off.

(*Mr. Claude Baggallay.*) Apparently, the 16,932*l.* was knocked off, but it is very difficult to tell.

(*Mr. Pember.*) The capital expended to 1845, as stated by Mr. Lee, was 292,932*l.*, and as fixed by Parliament, 276,000*l.*; so Parliament knocked it off.

(*Mr. Claude Baggallay.*) Parliament did knock it off.

(*Chairman.*) Parliament did make a deduction.

(*Mr. Balfour Browne.*) It is quite clear, my Lord, that in that year, Parliament made a large reduction from the capital account. The evidence of Mr. Lee was—I have only carried to that capital account, works which are now in existence.

(*Mr. Pember.*) I am wrong.

(*Mr. Balfour Browne.*) Works which have been destroyed I have not included. Therefore, it is quite clear that Parliament knocked off a lot of obsolete works at that time; that some of the works existing at that time may have become obsolete since, of course, goes without saying.

(*Mr. Claude Baggallay.*) What we are dealing with now is only the 40,000*l.*

(*Mr. Balfour Browne.*) I do not know what you are reading. I cannot follow that.

(*Witness.*) That was all clearly settled by Parliament in the year 1845, upon the expenditure previous to that.

(*Chairman.*) What we want to know is why Parliament knocked off 16,932*l.* from your capital account; what items did that represent?

(*Mr. Pember.*) That is only what Mr. Gomme says,

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(Chairman.) No, they are your own figures.

(Mr. Pember.) Mr. Gomme's, my Lord.

(Chairman.) No, your own figures.

(Mr. Balfour Browne.) Sir Henry Knight says so, too.

(Mr. Claude Baggallay.) It is a quotation from what Mr. Gomme said.

24,939. (Chairman.) Are those figures quite right; is it not right that Mr. Lee stated the capital expended in 1845 was 292,932l.?—That is quite correct.

24,940. Is it true that Parliament fixed the capital in 1845 at 276,000l.?—No.

(Mr. Pember.) It was 346,000l.

(Chairman.) In 1845?

(Mr. Pember.) That is in 1845.

(Chairman.) It is stated here to be 276,000l.

(Witness.) No.

(Mr. Claude Baggallay.) Parliament fixed it in 1845 at 346,000l. That is where Mr. Gomme is wrong.

(Chairman.) That is the whole capital including mortgages, but the share capital was fixed at 276,000l.

(Mr. Claude Baggallay.) Yes, the share capital.

(Mr. Balfour Browne.) The Act says 276,000l., "regard being had to the relative value of the works, property, and undertaking of the Southwark Water Company and the Vauxhall Waterworks Company." Those are the words of the Act. It was on some valuation of the works then.

(Mr. Pember.) It might not have been a valuation of the works.

(Major-General Scott.) Did the nominal value of the shares at that time correspond with the reduced capital?

(Mr. Balfour Browne.) I do not know how it would be done.

(Witness.) At any rate it was in regard to an expenditure prior to 1845, and I say we cannot go behind that decision of Parliament.

(Chairman.) I see there was an existing loan capital secured by mortgage of 70,000l., in addition to the 276,000l.

(Mr. Claude Baggallay.) It was exactly as much a part of the capital of the company then as the present debenture stock of the company is now.

24,941. (Chairman.) In that view, if I am to take the whole 346,000l., namely 276,000l. of share capital and 70,000l. of mortgages, if I am to take that as the capital that had been expended by the company, why does Mr. Lee state the amount only at 292,932l.? You cannot have it both ways. If you claim the benefit of that 70,000l. as being what Parliament allowed as your capital in 1845, it would seem that you had not expended that as stated by Mr. Lee?—On that point also it must be borne in mind that we have been to Parliament many times since 1852, and all the capital on which we are now paying dividend or interest is absolutely capital authorised by Parliament, and is duly certified from time to time by the Government auditor.

(Mr. Balfour Browne.) Since 1871.

24,942. (Chairman.) There is something about an amount of 61,126l. which I really cannot understand, and therefore I cannot ask you any question about it. Mr. Gomme estimated that you had got at least 200,000l. worth of capital obsolete, over age I may say, that is over 60 years old?—Yes, but he says it is only estimated; I say, founded on what? What does he found his estimate on?

24,943. It is founded on the fact that it is 60 years old?—I am acquainted with the affairs of the company, and I have never met with anything that could warrant such a statement.

24,944. Have you got capital that was expended 60 years ago?—Such capital as I have already shown was settled by Parliament in 1845.

24,945. Have you got capital that was expended more than 60 years ago?—We must have, I should think.

24,946. Do you dispute Mr. Gomme's figure, that there is 200,000l. of it?—Yes, I do dispute the figure. I do not know what his foundation is for making such a statement.

24,947. The date on which the capital was expended, I suppose, appears somewhere in your account?—But he says he objects to that capital, because he says it has become depreciated by losses, or something of that sort.

24,948. Because it is 60 years old?—Yes, but I say there is no foundation for any such statement.

24,949. What do you say is the amount of your capital which was expended more than 60 years ago?—I am not disputing that figure.

24,950. That is what I have been asking you; really the time we waste in beating about the bush is intolerable?—I am very sorry.

24,951. Is there 200,000l. of your capital that is more than 60 years old?—I should think there must be.

24,952. Then you would agree with Mr. Gomme so far as that goes, only you say that is not to be cut off—why not?—Because that is all properly represented and is also in perfect order and perfect condition still—I mean the works that were created by it.

24,953. (Sir John Dorington.) Where you disagree with Mr. Gomme is in the use of the word "obsolete"?—Yes, that is so, it is not obsolete—thank you for the suggestion.

24,954. (Chairman.) It is 60 years old, but you say it is not obsolete?—It is not.

(Mr. Pember.) Land does not become obsolete.

(Sir George Bruce.) It might be 600 years old, and still be good.

(Chairman.) Yes.

(Mr. Claude Baggallay.) All the capital expenditure beyond the 1845 Act is over 50 years old.

(Witness.) You see our company came into existence in 1845, and it took over certain works which may now be over 60 years old. It bought them at their then value as stated in the Act of that date, and the question cannot be re-opened on imagination when it was settled on facts at that time.

24,955. (Chairman to witness.) You laid before Lord Balfour's Commission an estimated daily supply of 25 gallons per head, I believe?—Yes.

24,956. Was that based upon information that you had in your own district?—Yes, it was based on the daily readings of Deacon's meters in the constant supply district.

24,957. That means that you took the quantity of water supplied in your district and divided it by the number of persons supplied, or by the total population—which?—We took the readings of Deacon's meters; our district is divided into sections each governed by a Deacon's meter—

24,958. Do get to the ultimate result?—We took the readings of those meters as the quantities which past experience showed were the quantities that were being supplied per head per day in these respective districts.

24,959. No, it did not show the quantity per head; it could only show you the total quantity supplied in the district?—Yes.

24,960. What did you divide that by to get the supply per head?—We divided it by the population.

24,961. The total population, or the population supplied?—The population supplied.

24,962. How did you get the population supplied—by taking a certain number per house?—Yes; 6·7, I think, is the figure we took per house.

24,963. That gave you this average of 25 gallons per head?—Just so.

24,964. Now, can you give us what your supply per head has been since 1891?—Yes, the supply per head in 1894 was 37·5; in 1895, 42·2; and in 1896, 41·7.

24,965. To what do you attribute that very large increase—having estimated it at 25 gallons per head you jump to 41·7?—Yes, because we had that very serious drought in 1893, you will recollect.

(Chairman.) I should have thought that drought would decrease the quantity instead of increasing it.

(Mr. Claude Baggallay.) It is the demand for water for gardens.

(Chairman.) That does not necessarily increase the supply.

See 3781;
3812-5.

(*Witness.*) We had a very serious frost in 1895. In 1895, during the time of that serious frost, a very much larger quantity of water was consumed in the district than under ordinary circumstances.

24,966. On account of leaking, do you mean?—On account of leakage and waste.

24,967. Give me your figures for 1894?—37.5.

24,968. That again was an immense jump from your 25?—Yes, but it had been gradually going up as the population had been increasing.

24,969. No, this is supply per head. What on earth has that got to do with the population increasing?—I think this is a question which will be more satisfactorily dealt with by our engineer; he understands it better than I do.

24,970. I wish to goodness you had said so some time ago?—There is a difference in this; the 37.5 is the average for the whole district, but the 25 was a figure arrived at in certain districts where we could test it by Deacon's waste preventer.

24,971. How have you got at it in places where you have no Deacon's waste preventer?—I am quite sure the engineer will deal with those questions far better than I can.

24,972. (*Sir George Bruce.*) I think that your report to the Balfour Commission made out that the Southwark and Vauxhall were supplying 28.94, and you suggested for the future 25, but you were actually then consuming 28.94?—That is so.

(*Sir George Bruce.*) So that the actual rates in the subsequent years require to be compared with 29 instead of 25 when you estimate the increase.

24,973. (*Chairman.*) I do not know how you get that 28.94, for I have before me a table of averages up to 1891, in which 24 is the very highest?—You will find it on page 15 of Lord Balfour's Report.

24,974. I will pass from the supply per head, as you do not seem to be master of the subject?—That 28.9 which Sir George Bruce points out is the average for the whole district, but the figure 25 was arrived at from those certain sections of our district where we could test it exactly by the Deacon's waste water meters.

24,975. (*Major-General Scott.*) There has been, to a certain extent, has there not, a revision of the population in your district since the time of the Balfour Commission?—Yes, we have had that.

24,976. That would account for a difference in the rate per head in the supply. If your population happened to be reduced subsequently, it would raise the rate per head, of course?—Yes, that would be so.

24,977. Are you aware that there was such a reduction in population?—Yes, I believe I can show you that, 7.42 was the figure adopted originally but we have adopted the figure of 6.71, which I think is a figure you yourself took as the proper basis for such a calculation.

(*Mr. Claude Baggallay.*) Those figures in Sir Henry Knight's statement of evidence, under the heading of supply per head, giving the averages in the different years, are exclusive of trade supplies.

(*Mr. Pember.*) And as they are 5.89, that comes up to the amount of the Balfour Commission.

(*Chairman.*) That explains it. I could not understand it.

(*Mr. Claude Baggallay.*) I do not know whether you want to ask Sir Henry about the storage.

24,978-9. (*Chairman.*) I was just coming to that. (*To the witness.*) I will not take you through the other companies, but speaking of your company, what storage have you got now for unfiltered Thames water?—456 million gallons we have now ready.

24,980. Do you see any difficulty in managing the metropolitan water companies as one concern?—Yes; I do not think they could be efficiently managed as one concern, because I think the area is so huge and the supervision required would be so complicated, that it would be infinitely better to manage the supply as it is managed at the present moment by sections. There is so much detail; if that is all to come from one central point, it could not possibly be attended to properly as it ought to be.

24,981. (*Mr. De Bock Porter.*) Do you think a federation of the companies would be advantageous?—Yes,

I think a confederation of the companies for certain purposes most desirable.

24,982. Would it tend to economy?—Yes, I think it would tend to economy.

24,983. (*Chairman.*) How; in what department would the economy be made?—It would tend to economy in this sense. Suppose, in order to bring water into the Metropolis, you had to go to a certain distance, and it might be beyond the power of any one company to go to that distance, the federated companies could go any distance to bring water, and they could bring it more cheaply than each company could bring its own from such a distance.

24,984. (*Major-General Scott.*) Would you carry it so far as to make a joint main from London for particular purposes?—It might be so; for certain purposes that might be advantageous. But it is a very big question. I think, myself, that confederation would be exceedingly useful in dealing with all the sources of supply available for the companies. I think that a statutory committee of the federated companies—not only the London companies, but the companies adjacent to London—would be a very excellent authority indeed, to have a control over the various sources of supply. It would avoid all those difficulties which are constantly arising all round about us, such as different counties claiming all the water that is under their chalk as belonging to that county, and saying nobody else shall have any of it.

24,985. (*Chairman.*) Why, for instance, should Hertfordshire be more willing to give up the water in its chalk to a federated body than to a single company like the New River?—Because it would be the duty of that confederated committee not only to see that all the water was available for all, but to take care that no part of the district was denuded of the water for the benefit of another part. They would control the quantity to be taken from each source of supply.

24,986. (*Mr. De Bock Porter.*) If federation be advantageous, would not amalgamation be still more so?—I do not think that amalgamation is practicable, because so many questions would arise as regards details which it would be most difficult, if not impossible, to settle; whereas by confederation you would leave each company to work out its own destiny, and for works which would be carried out more advantageously by one party for the benefit of the whole, you would then have your confederated committee.

24,987. In a great many districts the water could be distributed much more economically if it were distributed from the nearest possible source, instead of being taken right across London?—Yes, that would naturally be so.

24,988. You could not do that with confederation?—Yes, I venture to think you could, because the confederation would represent all the interests concerned with the sources of supply, and that confederation would say, in the case of the East London or of the New River Company:—You can take a certain amount of water from Hertfordshire which is close at your doors. I only mention that as an illustration. At the same time they would take great care that they did not take more from Hertfordshire, which would imperil Hertfordshire getting what it wanted for itself.

24,989. (*Chairman.*) Why should the confederation be more careful about that than the New River Company is now?—Because the confederation would represent all the interests.

24,990. In Hertfordshire?—Yes. This is a very big scheme, and the confederation should represent all the sources of supply within a reasonable distance.

24,991. (*Sir John Dorington.*) Do you mean to have a representation of public bodies on that confederation?—No, I do not think the public bodies would want to be represented, because the public interests would be taken care of by the representatives of the water companies supplying each particular district.

24,992. (*Chairman.*) Why should the New River Company, which at present is accused of denuding Hertfordshire of its water, suddenly become patriotic for Hertfordshire because it is in a confederation?—It would not become patriotic for Hertfordshire, I should say.

24,993. That is exactly the difficulty we are putting to you: why should it take less water from Hertfordshire if it is in a confederation than it does now?—

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Because the confederation which would represent the whole locality would say, "You must not have any more water from Hertfordshire," or "You may take more water from Hertfordshire."

24,994. (*Sir John Dorington.*) In fact, the Southwark and Vauxhall would act as an antidote to the New River?—No, I do not quite see how that illustration applies.

24,995. You say that the directors of the New River Company on this confederation would not be patriotic, as the chairman has put it; in fact, they would be of the same opinion as they are at present—they would want to get as much water as they could; but that the others would keep them in order; the others would say: "You are damaging our interests or damaging our representation, and so you must stop taking so much water from Hertfordshire, and we will not let you have it"?—I reckon the members of this committee would be in possession of all the facts, and all the circumstances in connexion with the various sources of supply. It would not be at the volition of the New River Company or any other company to go to spot A, or spot B, and take any quantity of water it liked. It would be the province of this federated committee to decide how much water could be taken from a certain spot or a certain place, and they would also have to decide how much water was requisite for the supply of that particular spot or place. Then they would say to the particular company that wanted to take this water, "You can take so much, and you must not take more."

24,996. Would they not be guided by the fact that it was cheaper to get water from a well in Hertfordshire than to get water from Wales?—That would be certainly a question for them to decide, but not as regards any particular place. They would have to decide as to whether the sources of supply within the district that they could get water from were any cheaper than they could get it by going to a distance.

24,997. You would be inclined to think that, looking round to all the sources of supply, it might be the interests of the companies—and nothing else would guide them but their interests—not to take quite so much water out of Hertfordshire?—It would not be a question of interest; it would be the decision of those parties interested that such and such a quantity might be taken, and no more.

24,998. But they would be guided by their interests, and nothing else, would they? They would not be guided by what has been called patriotic motives?—No, all the water authorities concerned would be represented, and each would state its own case, and state what its interests were. That would have to be considered by all, and it would be to the interests of the whole companies supplying the whole of the area contemplated that this decision should be arrived at, so that there should be no competing, or no fighting, as to how much water should be taken, or how much should not be taken.

24,999. (*Chairman.*) Do I understand you to mean that all the private water companies in Hertfordshire should be joined in this confederation; is that what you mean?—What I mean is this—

25,000. If you would answer a single question, it would be so pleasant. Do you mean that the private companies in Hertfordshire are to be joined to the confederation?—Yes, in Hertfordshire, and all the other adjacent places.

25,001. We are upon Hertfordshire?—Very well, yes.

25,002. There is no other way in which I can fix you as well as putting a meaning to your statement that all the interests concerned would be represented. Do you mean that any private company that there may be drawing its water exclusively from Hertfordshire should be joined in the confederation?—Yes.

25,003. (*Major-General Scott.*) There are some local authorities in Hertfordshire who are water suppliers. Would you include them in your committee?—Yes, I think all persons responsible for the water supply should be included. I am the chairman myself of the Rickmansworth and Uxbridge Valley Water Company, which is in Hertfordshire, and I consider, in the interests of the constituency I have to supply there, such an arrangement would be beneficial to me.

25,004. (*Sir John Dorington.*) You would not limit your confederation, then, to the eight companies?—No, I do not propose that.

25,005. You would cover the area of the administrative county of London?—I would cover an area which would have to be settled by experts. In my opinion, that area would be very large and very extensive. It would not extend beyond the Chiltern Hills on the north, and the Reigate Hills on the south, and it might extend as far as the Medway on the east, and Reading on the west. As I said before, that is only a very rough outline of the whole area which is concerned when we are considering the question of the sources of supply. I think you can only deal with it properly in such a comprehensive manner that you should make all the sources of supply available for all, and also protect all, so that their natural sources of supply will not be unduly trespassed upon.

25,006. (*Chairman.*) What I fail to see at present is, how the protection comes in. Supposing the Southwark and Vauxhall, the Lambeth, and the Chelsea all say:—"Dear me; but there is plenty of water in Hertfordshire, and we can get it so easily and cheaply; let us take that"; what is to protect Hertfordshire?—I say, the confederated committee.

25,007. But why should the confederated committee be zealous for Hertfordshire?—Because Hertfordshire would be represented on that committee, and they would be in charge of the sources.

25,008. Two members out of 50, perhaps; how could they control it?—I do not contemplate that you would have such a large committee as that, but there would be a certain proportion, of course. It would be the interest of every company to see that the source of supply was not unduly treasured upon, because it would come back to the other companies.

25,009. How is it to the interest of any company to prevent the well at Haileybury College being dried; what does it matter to them?—It does, because if there was another company drawing its source of supply from that well—

25,010. But there is no other company; there is only Haileybury College, I think I am right in saying Haileybury College—

(*Lord Robert Cecil.*) Yes, my Lord, you are perfectly right.

(*Witness.*) That is not an authority or company supplying water for use.

25,011. (*Chairman.*) I know it is not; that would have no representation, and would be sacrificed?—No, because the quantity of water which is drawn from their well would be considered in the available quantity of water to be drawn from that particular district in which the well is situated.

25,012. (*Mr. De Bock Porter.*) Assuming federation, how would you enforce the views of the executive?—They must have Parliamentary powers to enforce those views.

25,013. It would be a big scheme?—It would be a very big scheme, indeed, and would require a very great deal of thought and careful working out—no doubt at all about that.

25,014. It would be rather more complicated than purchase, would it not?—I think it would be a very excellent thing for the supply to have such an authority. It would be a controlling authority for the source of supply. I also think it should be a controlling authority as to the necessary works that each individual company should provide in order to meet the requirements of its district.

25,015. (*Mr. Lewis.*) Would you put it in the power of the majority to coerce the minority against its obvious interests?—One must always suppose that decisions would be arrived at after due consideration of all the facts that could be placed before them.

25,016. Yes, but still, here you have a powerful body, perhaps, all agreed to coerce a company to its ruin, perhaps?—I say it with respect—I do not think that is a possibility that could arise, because it would be to the interest of the whole of the companies to see that no one company failed in its obligations.

25,017. I am afraid that does not work in practice?—The failure of the East London Company to a certain extent last year, we may take it, was detrimental to the interests of the whole of the water companies. It was to the interest of the whole of the water companies of London to have prevented that failure if possible. We did meet it afterwards, and helped to prevent it. I think the confederation that I have

spoken of would have a very beneficial effect in that direction, because it would have powers to see that each water company was properly provided with plant and water to meet the requirements of its district.

25,018. If the federation were a federation outside the companies, there might be some prospect perhaps of good results; but seeing that each company has its own interests to consider, I do not see how the plan would work at all?—Every company would have its own interests to consider as representing that confederation, and it would do its best to take care that its interests were not damaged.

25,019. Yes, but a company having to look to its own interests can hardly be expected to look to the general interests?—We are not always, perhaps, the best judges of what is for our own interest, and a company might desire to do that which would not be desirable, either in its own interests, and certainly not in the interests of all. My object is so that the water supply over the whole of this district should be secured and left beyond the possibility of doubt. That is my object in the proposition I have made, and I think that would be obtained by taking care that all sources of supply are properly utilised, and taking care that every company or authority is properly provided with works.

25,020. Why not adopt the simple expedient of amalgamation of all the companies?—Because amalgamation deals with a great many other questions than you have to deal with as regards water supply or provision of works.

25,021. If that is all, those things can be adjusted?—It has to deal with the present position and prospects of the companies, and their powers of rating, and so on. If you amalgamate them all for that purpose, and bring them into one system and one rate, we will say, incredible and intolerable differences would arise which I think you would never settle; whereas, if you leave each company alone to work out its own destiny as it is, subject to the control which I have mentioned, then I think you would find you have advanced a great deal towards the perfection of the water supply of the Metropolis.

25,022. (*Chairman.*) Supposing the undertakings of the eight companies all purchased, and in one hand, and managed by a board that has no pecuniary interest to derive from the water supply, whose only interest it is to make it as good and as cheap as it can, why should not that board do all that your federation could do?—Because, in the first place, you must have the continual squabbles which are now going on as to the water to be derived from various sources of supply.

25,023. Why should you have those squabbles more if there was one owner of the whole than if there was a federated number of owners?—Because the owner of the eight metropolitan water companies might want, as has been attempted now, to take water from other sources of supply than those which are at present recognised; or he might want to take water to a larger extent. Whenever he wants to take water from Hertfordshire, or Essex, or Surrey, there would be those interested parties who would immediately raise a cry against taking that water which they would want for themselves, and he would meet with the same difficulty which is met with now when we are attempting to take water from other sources.

25,024. Why should the owner of the whole be more liable to do that than the federated eight?—Because the federated eight would not include representatives from the whole of the extensive district where it is possible to get water from. The eight companies amalgamated would simply represent the Metropolis, and they might do injustice to the neighbouring authorities that have to supply water in the neighbouring counties. I want to prevent that if possible.

25,025. Do you think that your federation scheme would result in economy of management?—Yes. I think it would. In those respects it would save a good deal of money being expended uselessly in fighting over sources of supply.

25,026. (*Sir John Dorington.*) Would a confederation on a less ambitious scale than that what you have sketched out be useful, namely, one only of the eight companies?—I think it would be deprived of a great deal of its utility.

25,027. Would it be useful?—It would be useful no doubt, to the extent of the eight companies.

25,028. It would obviate the necessity of having duplicate mains in streets?—That is almost impossible to prevent as regards the present condition of things. It might prevent, and it would prevent, the laying of duplicate mains in the same street in the future; in fact, that thing is not done now by any of the companies. Where we have overlapping districts, it is always understood that certain companies lay mains in the streets which they could supply best, and the other companies lay mains in the streets which they could supply best. I do not think there have been any duplicate mains laid in any streets in our district since 1852.

(After a short adjournment.)

25,029. (*Chairman.*) I do not know whether you have anything to tell us on the subject of control. Can you suggest any additional control that would be useful to the consumer?—I do not think I can suggest any additional control to that already in existence, that would be useful to the consumer. I have considered also the various propositions for further control which have been made to your Commission. I do not think that any propositions have been made of a character which would be likely to carry us any further than we are at the present moment, because Sir John Lubbock's proposal, I thought, was utterly impossible, and the proposals that were made by Mr. Dickinson, I think, have been pretty well discounted by the action of the water companies at various times. Then I think that the only further control is that control which we must all submit to, and I think that is the control of Parliament. Then as regards the control of the companies by themselves for themselves, that I have already dwelt upon in the evidence I have already placed before your Lordship to-day. Beyond that I do not see that any further control is desirable or needed. I am afraid you may carry control to such an extent that you will take the whole responsibility off the companies' hands entirely, and put it upon somebody else.

25,030. Do you object, for instance, to what Mr. Dickinson suggested, that the County Council should have power to analyse the water that you supply?—Yes, I think that would be perfectly useless. It is already analysed by the companies' chemists and the Government chemists and analysts, and I do not think that any possible good could result from introducing another analyst of any sort.

25,031. We have heard that there is considerable doubt still as to the best mode of dealing with flood water—whether flood water ought to be allowed to subside for a certain number of days; whether you ought to let the first days of the flood go by or not; whether it would be wise or safe to hasten the rate of filtration, and so on. Do not you think that some sort of control upon those subjects might be useful?—I have lived on the banks of the Thames for 40 years, and I have observed every flood that has occurred in those times and watched them very closely. On the question as to the number of days which would elapse when one should not take flood water in, that entirely depends upon the nature of the flood, whether it is very rapid or whether it is gradual or otherwise. But my general conclusion is, that perhaps from four to five or six days might be regarded as a safe time; and when I use that word "safe," I do not mean that there is anything injurious in flood water to damage the water as regards making it proper water for drinking and for dietetic purposes, but I mean that, in the interests of the companies themselves, we should not, as business men, take in flood water when it is thick if we can possibly help it, because it would only mean putting so much deposit in our storage reservoirs or so much deposit in our filter beds. Therefore I think that that matter might safely be left without any further control, because the interests of the companies is to exercise a reasonable and sensible discretion.

25,032. I do not know whether you set your judgment above that of the experts and chemists who have appeared here and who tell us that, in their view, a series of experiments and a prolonged inquiry would be necessary before they could satisfy themselves what was the safe way of dealing with flood water. Now how could that be done without some sort of control?—As regards taking into the reservoirs, I think, as I have told you, the interests of the companies is sufficient to control that. As regards the view as to its being likely to be rendered less drinkable or less valuable for dietetic purposes, that is a matter which one must necessarily submit to the opinion of those

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who are better able to form a conclusion than myself; but I only gather from the evidence of the experts who have been called before this Commission, that there is nothing deleterious in the fact of the water being taken at the beginning of the flood.

25,033. Then I must take it, I suppose, as your final answer that you think no additional control of any sort is desirable beyond what exists at present?—As regards that point, no.

25,034. Or as regards any point?—Quite so, my Lord, except the control I have alluded to as between ourselves—that is, by federation.

25,035. Have you got anything to say about demand notes. I think the question has been raised as to the propriety of the demand notes which are issued by the different companies.

25,036. Confine yourself to your own company, please; do not enter into a general crusade?—If I confine myself to my own company, I can but hand in my own demand note and explain it.

(The witness handed in Demand Note.)

25,037. Say anything you have to say?—I hand it in. You will see by that note—the whole sheet—that the bottom portion of it sets out clearly and distinctly every item for which the consumer has to pay, and on the back of it you will also see extracts from the various Acts of Parliament showing the authorities on which these demands are made.

25,038. (Mr. De Bock Porter.) But you demur, do you not, to the statement that your company always demands its full rate?—I am alluding to what I understood his Lordship's question to mean—the sort of demand note we issue when we apply for our account. That is what I am alluding to.

(Chairman.) I really cannot understand what it is you want to tell us about demand notes. That is why I leave the reins loose upon your neck for you to tell us what you wish to say.

(Mr. Pember.) It was said that people did not know what they were paying for, and I put in several demand notes.

(Witness.) I put in mine simply to show that we set out every item that a man could possibly be asked to pay for.

25,039. (Mr. Claude Baggallay.) Is not Mr. De Bock Porter right in the question he put to you just now? You complain of Mr. Cripps having said that you invariably charge your full charges, but is it not the fact that there are cases where you supply by agreement under the full charges?—That is the case; there is no doubt about that.

25,040. (Mr. De Bock Porter.) In largely rated premises, that is?—Yes, in largely rated premises mostly—in fact, I may say, wholly—in largely rated premises, and they are premises which are used for storage and warehouse purposes only, where there is nobody in them except the porter from day to day, and where there is no water used at all.

25,041. (Chairman.) How many of such premises are there in your district?—A largish number. I should think you might take it at 1,000.

25,042. 1,000 premises where you do not charge the full rate?—Yes, you may take it as such.

25,043. What is your maximum reduction from your full rating?—That will all depend upon the circumstances in each individual case.

25,044. Of course it must depend upon the circumstances of each case, but I am asking for a maximum case?—I have a case here of Hay's Wharf, where the rateable value is 11,317*l.*, and the amount on which we charge water rate is 1,886*l.*

25,045. The premises are assessed at 11,000*l.* odd, and you charge upon 1,800*l.*?—We charge on 1,886*l.*, yes.

25,046. That is your best case, is it?—That is the largest case I have got on the list before me. The smallest case I have on the list before me are premises worth 146*l.*, and we charge on them 96*l.* I have some dozen cases besides.

25,047. (Mr. De Bock Porter.) But in the case of the wharf, I presume the proportion of the building which is occupied and the water used is very small?—That is so; just the counting-house part.

25,048. (Mr. Lewis.) Have they a private well there?—No, I cannot answer that question. You see, the

premises are large; they are only used for storage; there is practically no water supply, only what is wanted for their few clerks, and other sanitary purposes.

25,049. (Chairman.) Have you anything more to say about demand notes?—Nothing more, except that I have handed in all the demand notes that are consecutively made.

25,050. What do you mean by "consecutively made"?—If a man does not pay, there is a second demand made, and then a third demand note, and so on, and then there is a demand notifying discontinuance of the supply if he does not pay.

25,051. I do not think we want these on the notes; your demand notes do clearly set out each head of charge, as it were?—That is the point, my Lord, which I thought you desired to have placed before you.

25,052. I think we had that before us already. Now just to revert to what I ought to have asked you before. You did not join in the Staines Reservoir Scheme?—No, we did not.

25,053. Why not?—Because we thought we could do better; and in this way. There was plenty of land available immediately at our intakes at Hampton and on the opposite side of the river at Molesey. We could purchase that land, and we have purchased it. We could erect our reservoirs on it quite as cheaply as we could erect them at Staines, and therefore we save the expense of the conduit from Staines. It is carrying out part and parcel of the Staines Reservoir Scheme, or, as it may be more properly described, the Thames Valley Storage Scheme.

25,054. (Mr. De Bock Porter.) That was hardly the line you would have taken if you had had federation, would you?—Yes, I think so, because we might have proved to the Federation Board that it was cheaper for us to construct the reservoirs where we have constructed them, saving the cost of the conduit, and the Board would naturally then have assented to that as part of the scheme.

25,055. But was there no economy in going as associated companies to take the water at Staines?—There would be an economy if you are compelled to go to Staines and bring it from that distance, but there would be no economy when you could get land available close to your intake and you save the expense of the conduit, which is a very serious item.

25,056. (Mr. Lewis.) Still, one-eighth of the cost of going to Staines would have been very much less than the cost of making the works at Hampton?—No, I am told that the cost of the reservoirs we are constructing at Molesey will be no greater than the cost of the reservoirs that are being constructed at Staines.

25,057. (Major-General Scott.) What was the capacity of the reservoirs you proposed to construct at Molesey?—1,176 million gallons.

25,058. Considerably smaller than any single reservoir of the Staines Committee?—Yes. That is included in two reservoirs. The 1,176 million gallons is divided into two reservoirs.

25,059. One would be about 580 million or something like that?—Something like that. One is larger than the other.

25,060. And the single reservoir of the Staines Committee is how much?—I do not recollect.

(Mr. Pember.) 3,600: They say it is 3,300.

(Mr. Claude Baggallay.) It is in two.

(Witness.) That is in two, I think.

(Major-General Scott.) Is it?

(Mr. Pember.) Yes.

25,061. (Major-General Scott.) Still, the single reservoir at Staines is very much larger than your single reservoir?—Certainly, very much larger.

25,062. There is an economy in a large reservoir?—On that point, General, you would be a better judge than myself. But there is an advantage in having reservoirs of a moderate capacity, because in case of cleaning and things of that sort you do not throw so much out of use.

25,063. (Chairman.) What do you call a reservoir of a moderate capacity. How many million gallons?—Say 700 or 800 million gallons. Such a reservoir as we are proposing to construct at Molesey.

25,064. You do not like reservoirs of 3,600 million gallons?—I do not say, my Lord, I would not like them, but I think there is a great deal to be said in favour of the smaller reservoir as against the larger one.

(*Mr. Pember.*) Of course, that is for the needs of one company.

(*Witness.*) That is an important difference. It is only for that one company, the other is for three.

(*Mr. Claude Baggallay.*) In the case of the Southwark and Vauxhall reservoirs now authorised, it would not be double the cost of one, because the central wall will be common to the two reservoirs, you will build one first and then add on the other.

25,065. (*Mr. De Bock Porter.*) You are interested in the bringing of sea water to London, are you not?—Yes.

25,066. Do you look to that to afford any relief to the water companies in regard to future water supply?—I look upon that as a very important consideration, indeed, in regard to the future water supply of London. We are comparatively close to the sea, and an Act of Parliament was obtained in 1896 authorising, with necessary powers and works, the bringing of water to London, and that is now taking the form of a company; and if those shares are subscribed for and the capital provided within two years' time, I think we may safely say we shall have the English Channel in London—that is to say such portion of it as our conduit will bring at a time. But, however, it is a very important consideration, I think, in regard to the future supply of water to London, and in connexion with going a long way to get an additional supply.

25,067. It will only be available for such purposes as watering roads and cleaning sewers, will it?—And baths.

25,068. (*Chairman.*) It is not everybody who is prepared for that?—But still that would be a very important relief to the filtered water.

25,069. (*Mr. De Bock Porter.*) And will involve duplicate mains and laying on separately?—Oh! most assuredly; it will be useful in putting out fires as well.

25,070. (*Major-General Scott.*) What do you suppose your daily supply of sea water would be likely to be?—The first main that we propose to lay would bring 10 million gallons.

25,071. (*Chairman.*) Per day?—Per day. Of course a very small quantity in comparison with the wants of London, but still any quantity more can be brought.

25,072. Has the experiment of throwing salt water on a fire ever been made?—I cannot tax my memory, my Lord, but we have had reports from all parts of the country as to the purposes for which sea water is used, and my impression is that sea water has been used for such purposes and has been found to put out a fire more readily than fresh water.

25,073. (*Mr. Lewis.*) It would not be suitable for watering streets, would it?—I do not see why it should not. All the evidence that I have been able to collect from places where they use it for street watering tends to the impression that it has considerable advantage over fresh water.

25,074. (*Chairman.*) It dries very slowly, does it not?—Yes, no doubt it would dry more slowly than the other, and, therefore, it would last longer.

(*Mr. Pember.*) It would keep the mud going.

25,075. (*Chairman.*) Once you flushed a street, I should have thought that you would want it to dry as quickly as you could?—In dusty weather when you want to prevent the dust flying about, the longer it lasts, the more service it renders.

25,076. That is watering, not flushing?—I should like to say a word or two in regard to a table I have here. I will not detain the Commission very long, but I should like to say a word or two with regard to this table.

25,077. It is a table showing the storage capacity required to provide a daily flow of 200 million gallons over Teddington Weir, and a daily supply of water by the companies of 400 million gallons. We have had that stated to us in the most elaborate detail by three or four witnesses; if you want to contradict them, pray, do?—No, I do not wish to contradict them, but I do wish, with your permission, to give you some further

details as to the bearing of the question of the flow of water over Teddington Weir.

25,078. Go your own way, then, and say what you want to say?—I will not detain you more than a few minutes.

25,079. I really will not take any more figures down, you must either adopt the figures or contradict them?—I do not think it would be material either to check the figures, or to contradict them, or otherwise, because if there should be a discrepancy of a little, it will not affect the argument which I want to place before your Lordship.

25,080. Give us your argument?—I make the nett storage required to provide that 400 million gallons from the Thames and allow 200 million gallons to go over Teddington Weir to be 35,242 million gallons.

25,081. Do you calculate that upon the conditions of 1893 or 1898, or what?—That is upon the conditions of 1893. Now, on the altered conditions, if the flow of water over Teddington Weir is 100 million gallons, the storage required is 17,762 million gallons.

25,082. We have had all these figures proved before us?—I only want, if I possibly can, to press that upon your attention, because it materially affects the question of the finance in the future.

25,083. Of course it does. We know abundantly that if you can cut down the flow of the river to 100 million gallons, it will diminish the cost of your storage enormously?—If you are satisfied, I have not another word to say.

25,084. What you have to satisfy us about is that 100 million gallons a day is enough?—I want to satisfy you not only that it is enough, but that 100 million gallons a day—

25,085. You have not said a word to satisfy me of that at present. We have had the engineer of the Thames Conservancy, who said that he would not on any consideration consent to it. What is your proof that 100 million gallons a day is enough?—Because less than 100 million gallons a day were passing over Teddington Weir only last year, and there was no material complaint.

25,086. Mr. More told us that was because people were sick of complaining—that it was no use?—Then, again, I think that too much importance is attached to that, because it only affects the flow of the river at the ebb of the tide. That only occurs once in the 24 hours, because if it occurs at night time, it does not affect it.

25,087. It used to be twice in the 24 hours, but I daresay you have altered that in the Southwark and Vauxhall district?—I am afraid your Lordship did not hear what I said in addition—that one of those occasions must occur in the night time, when there is no traffic going on, therefore, it is only practically once in the 24 hours that it affects the tide as regards navigation. However, my object was simply to call attention to the enormous difference between the cost of 100 million and 200 million gallons.

25,088. We have noticed that already?—I should like to say further, that if the 200 million gallons is wanted, it would be much more economically provided by a tidal reservoir, or by making the Richmond Lock into a full tide lock, and keeping the surplus water back and letting it down at low tide at comparatively small expense.

25,089. (*Chairman.*) Have you prepared a financial return in the form asked for by the Commission?—Yes.

25,090. Will you hand that in then?—Yes, that is it. (*The witness handed in Return. See Appendix V, 5.*)

25,091. Then have you a return showing the distribution of your capital expenditure?—Yes.

(*The witness handed in Return. See Appendix V, 6.*)

25,092. (*Major-General Scott.*) Have you got a return, showing the number of supplies, estimated population supplied, and the rateable value of the properties supplied by the company?—That is the return showing the parishes or places within the company's area wholly supplied by the company or otherwise.

(*The witness handed in Return. See Appendix V, 7.*)

25,093. Does that return show the places supplied by you outside your statutory limits?—We do not supply outside our Parliamentary boundary.

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25,094. (*Chairman.*) Do you also put in estimates of the capital expenditure that your company will have to make during the next 40 years?—Yes.

(*The Witness handed in Estimates. See Appendix V, 8.*)

25,095. Just give us what the total is?—Shall I read the letters in which they are comprised?

25,096. I only want you now, just that we may know where we are, to give us the total?—The total we anticipate is 2,000,000*l.*

25,097. (*Mr. De Bock Porter.*) Your estimate of January 1898, was 1,000,000*l.*, and your estimate of January 1899, is 2,000,000*l.*?—Our estimate of January 13th 1898, I think you will find, was 1,500,000*l.*, if you take it all into consideration; and in our estimate of 26th January, 1899, when we revised the consideration of the matter in consequence of a communication from your secretary, we thought it safer to fix the amount at 2,000,000*l.* In further explanation of that I have put in the correspondence.

Cross-examined by Mr. BALFOUR BROWNE.

25,098. One of the matters that is dealt with in these returns that you have just put in is the area of your district of supply. It is a fact, is it not, that so far as Wandsworth, Putney, and Battersea are concerned they are within the area of supply, both of yourselves and the West Middlesex?—If they are not wholly, some portions are, undoubtedly.

25,099. I take it wholly?—Very well.

25,100. Do you know that by some agreement between you and the West Middlesex, you are supplying those districts, and the West Middlesex not?—I do not know of any agreement, but it is a fact that we are supplying those districts and the West Middlesex are not.

25,101. Are you aware that the charges in those districts by you amount to 53,540*l.*, and that if the West Middlesex were supplying, they would be 41,579*l.*?—I take the figures from you. I dare say you have worked them out correctly.

25,102. A difference of 11,961*l.* per annum?—Yes.

25,103. Now, going to what you have just said with regard to the sea water supply, I do not suppose you represent that that would be a competitive supply at all to the Southwark and Vauxhall?—Not intended to be a competitive supply in any sense, but an auxiliary supply.

25,104. At the present time the local authorities take water from you for watering streets?—Yes.

25,105. You have been representing to the Commission that the sea water may be used for that purpose?—Yes.

25,106. You would lose that customer then?—As regards that small extent of income arising from that source, we should lose it if the authorities took the sea water.

25,107. I pass from the sea water. Were you asked to join the Staines Reservoir Scheme?—Yes.

25,108. And you declined?—We declined.

25,109. Because you thought it was more in the interest of your shareholders to go for a separate scheme?—More in the interest of our supply to our district that we should go for a separate and less costly scheme.

25,110. The water would be precisely the same, I suppose?—The water would be precisely the same.

25,111. So that it was merely a question of economy from your own shareholders' point of view?—A question of economy in the conduct of our business, certainly.

25,112. I suppose you want to be allowed to remain the managers of your own business, do you not?—Most assuredly.

25,113. You do not want, therefore, to have this federated body that you have been talking about saying to you: "Whether you like it or not, you are to join in the Staines Scheme." Would you like that?—Yes. I should approve—

25,114. You would like that?—I should approve of the decisions of the federated company in the interests of all.

25,115. In the interests of all but my learned friend Lord Robert Cecil. The federated companies are to regulate the affairs of the companies, but they are not to have local authorities upon the federation, are they?—Yes, all local authorities who are supplying water.

That is simply my idea. That is a crude idea, and it would have to be worked out.

25,116. At any rate, this idea of federation is an entirely new idea, there is no such thing existing in any part of England, Scotland, or Ireland at the present time?—I do not know of anything of the sort, and there are no similar conditions to those which we have here.

25,117. You said that you did not see the necessity for any control and you said that that which had been suggested by Sir John Lubbock you entirely disapproved of?—I think it was quite indefensible.

25,118. If it was an effective and drastic control it would cost the company something, would it not?—Which control?

25,119. I say if it were an effective or drastic control it might cost the company something?—I do not quite follow you. Control from what source are you alluding to?

25,120. I will take a Government department. Suppose a Government department has a right to say: "Whether you like it or not you shall supply storage capacity of three times the amount you have got to-day" that would cost you a large sum of money?—Certainly.

25,121. And that would, of course, injure your shareholders' dividends?—Not necessarily.

25,122. Surely?—No.

25,123. If it was not necessary, from your point of view, and the Government department put it upon you, it would be an injury to your shareholders?—Yes, in that sense it would.

25,124. And that is what you object to?—Object to what?

25,125. You object to any control which would force you to spend money which you do not see your way to make remunerative?—No, I do not object to that if the works were necessary.

25,126. Would you like it?—No, I do not say I would.

25,127. Would you like, for instance, that the Local Government Board, or some other authority should have power to say: "You shall spend a million of money whether you can get a dividend on it or not." That would ruin your company, would it not?—No, certainly not. What I mean is this: If it were a competent authority that considered, after inquiry, that we were deficient in our works, or in any other way in order to provide a supply for our district, we should very willingly submit to their requirements.

25,128. Would you assent, for instance, if the Local Government Board said: "The West Middlesex can supply Wandsworth, Putney, and Battersea; you, the Southwark and Vauxhall, shall turn out and let the West Middlesex supply"?—Such a thing is unreasonable, and could not be possible, and is impracticable.

25,129. Now I understand?—May I finish my answer, please?

(*Major-General Scott.*) That has never been suggested.

25,130. (*Mr. Balfour Browne.*) No, I was only trying to see what he meant by "control"?—It would not be possible.

(*Mr. Balfour Browne.*) It has been suggested that there should be power in a Government department to make a company go for further water.

(*Chairman.*) If it were a desirable thing, it is in the power of the West Middlesex to do it to-day.

(*Mr. Balfour Browne.*) True.

(*Chairman.*) There is no agreement binding the Southwark and Vauxhall or the West Middlesex.

(*Mr. Balfour Browne.*) I do not know whether there is any agreement.

(*Chairman.*) I do not know whether there is or not; Sir Henry thinks not.

(*Mr. Claude Baggallay.*) You must take Sir Henry's answer, Mr. Balfour Browne. You asked him a question.

(*Mr. Balfour Browne.*) It can only be non-desirable to the West Middlesex, because they cannot divide a penny. If they were in the position of this company,

with a large dividend still unearned, they would, of course, be very likely to try to supply this district.

(*Chairman.*) They have been a good many years in that district without trying it.

(*Witness.*) I must appeal to your Lordship to allow me to finish my answer. It would be absolutely impracticable and impossible for such a contingency to come about as the learned gentleman has raised before your Lordship, for this reason: the Southwark and Vauxhall have constructed all the works necessary in order to supply this district with water, and they have the water to do it. If the West Middlesex have to do it, so much of the Southwark and Vauxhall works which have been constructed for this purpose would be useless. The West Middlesex would have to construct a whole series of works to enable them to do it, and they would have to get the water provided, also to enable them to give the supply. Therefore, it would entail such an enormous and useless expenditure that it would be utterly impracticable to bring about the state of things which the learned gentleman has represented.

25,131. (*Mr. Balfour Browne.*) You have told me it would be exactly the same water, and if it were practicable, it would save the consumers in these two districts between 11,000*l.* and 12,000*l.* a year?—If it were practicable and could be done.

25,132. Although you said to my Lord that you objected to control, I understand you do not object to purchase upon fair terms?—Upon the usual terms customary in such cases.

25,133. That is what you consider fair terms?—Yes.

25,134. You consider the Lands Clauses Act the only fair terms—that is what I understood you to say?—The Lands Clauses Act and the precedents established under that Act—all together.

25,135. And you would prefer that to any control?—No, I do not say that. I am an unwilling seller altogether.

25,136. I know that, but if you had as alternatives, drastic control or purchase, you would prefer purchase?—There is no reasonable control that can be imagined that I at all fear.

25,137. You have already said the only suggestion I made was not reasonable, and therefore you fear that. Let me see if I understand about this capital—

(*Chairman.*) What you suggested, Mr. Balfour Browne, if you will forgive me for saying so, was not control, but a complete alteration of the statutes.

(*Mr. Balfour Browne.*) No, my Lord.

(*Chairman.*) You suggested the Southwark and Vauxhall being turned out of the district which they have got by statute.

(*Mr. Balfour Browne.*) That was one of my suggestions. I also suggested that the Local Government Board should have power to make them go to new sources of supply or supply reservoirs—a suggestion which has fallen more than once from members of this Commission.

(*Mr. Pember.*) That is an alteration of the law.

(*Major-General Scott.*) That was done in 1852, so far as relates to a transfer of intakes, was it not?

(*Chairman.*) Yes.

(*Mr. Pember.*) That was done by Parliament.

(*Mr. Balfour Browne.*) I agree, that was control of a most drastic character.

(*Mr. Pember.*) But that was done by Parliament.

(*Mr. Balfour Browne.*) Yes.

(*Chairman.*) That was done by Parliament, certainly.

25,138. (*Mr. Balfour Browne.*) With regard to obsolete capital, if purchase took place, of course, I entirely agree with what my learned friend said, and what I said earlier in the day myself, that you would be purchased upon the revenue that you can maintain?—In all probability, yes.

25,139. Therefore the question of whether a certain work was obsolete or not, would not come in in that inquiry?—No.

25,140. If, however, you are to remain in possession of your works, it might be for the benefit of the consumers that all the capital which has ceased to exist should be taken out of your accounts, and that

you should not be allowed to pay dividend on that. Do you follow?—Yes. I think so.

25,141. Is not that exactly what was done in 1852?—Yes.

(*Mr. Claude Baggallay.*) Let me point out, for I have been looking up these proceedings of 1852 since the discussion just now.

(*Mr. Balfour Browne.*) So have I.

(*Mr. Claude Baggallay.*) There was nothing taken away from the Southwark and Vauxhall Company in 1852. In 1845 when the amalgamation of the two old companies took place, the Water Works Clauses Act of 1847 was not in existence, and there was no limit of dividend. What had to be fixed then was the capital of the company in 1845, not for the purpose of declaring dividends—because there was no dividend limit at all and there was no question of back dividends and no Water Works Clauses Act existed.

(*Mr. Balfour Browne.*) All this is argument.

(*Mr. Claude Baggallay.*) No, it is not argument. It is simply correcting what is wrong upon the notes of a few minutes ago. What took place then was this. It was proved that 292,932*l.* had been actually expended upon the works of the two companies at that time, but it was proved that 65,000*l.*—I am giving round figures—out of that had been expended out of revenue and not out of capital. Therefore, Parliament when fixing the capital under that Act, took a mean between the two and fixed the capital at 276,000*l.*, and that difference between 276,000 and 292,932*l.*, namely, 16,932*l.*, has already been written off by Parliament when it fixed the capital in 1845, not as obsolete, but they only allowed the company to capitalise for the future a portion of the expenditure out of revenue. That 16,932*l.*, instead of being taken here as an expenditure which now ought to form part of the 40,000*l.* and ought to be written off, has already been taken off before the capital was fixed in 1845.

(*Mr. Balfour Browne.*) All I can say is that I am cross-examining, not Mr. Baggallay, but this gentleman, and this is argument.

(*Mr. Claude Baggallay.*) Perhaps your Lordship will allow me to explain this.

(*Chairman.*) Yes.

(*Mr. Claude Baggallay.*) Then in 1852 when the Water Works Clauses Act was incorporated and Parliament had to consider again—

(*Mr. Balfour Browne.*) The Water Works Clauses Act.

(*Mr. Claude Baggallay.*) I say the Water Works Clauses Act was first incorporated with this company's Act in 1852. When that was done, Parliament had again to consider the capital which should be fixed for the company so as to provide for the future for the limit of the 10 per cent. dividend, and the capital upon which back dividends should accrue. In order to do that, Parliament went into the capital of the company and it recites in the Act of 1852, that the capital actually raised at that time was 423,600*l.*; and it was proved before them that out of capital there had been expended 400,050*l.*—that that had actually been expended. Now I have gone through the evidence, and how much more there was out of revenue you could not tell; nor could you tell how much was to be allowed for increased value of certain portions of the property. There were some lands at Kennington and Vauxhall. Parliament then, having done that and having taken that evidence, fixed the capital of the company for the purposes of the Water Works Clauses Act at 423,600*l.* as the capital then previously authorised plus 180,000*l.* of new capital which was authorised by that Act. Parliament again revised that in 1855, when the Southwark Company's 1852 Act was repealed and the 1855 Act took its place, and Parliament again left those figures as they were. Nothing was knocked off for obsolete capital, though Parliament inquired into the capital for the purpose of applying the Water Works Clauses Act 1852.

(*Chairman.*) If I followed your statement rightly, Parliament allowed as dividend bearing capital an amount which had been raised, which was larger than the amount which had been expended.

(*Mr. Claude Baggallay.*) Larger than the amount which had been expended out of capital.

(*Mr. Balfour Browne.*) Smaller than the amount which had been expended.

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(Mr. Claude Baggallay.) No.

(Mr. Balfour Browne.) That is what you said.

(Mr. Claude Baggallay.) No, I did not.

(Chairman.) 400,051l. expended, raised 423,600l.

(Mr. Claude Baggallay.) That is so. Parliament allowed that.

(Chairman.) What has become of the odd 23,000l. if it has not been expended?

(Mr. Claude Baggallay.) It has been repaid since then, as Sir Henry has explained, by a sale of some lands for 21,000l. odd, which has been paid into capital. That is what I understood Sir Henry to say.

(Mr. Balfour Browne.) I entirely differ from my learned friend, but it is a matter of argument. I have, for instance, here a statement made to the Committee of 1852 by Mr. Lee. "I have only carried to that 'capital account works which are now in existence.' The next question is, 'works which have been destroyed and those I do not include. All the capital that was represented by works which were destroyed.'"

(Mr. Claude Baggallay.) Read the next question please?—" (2.) The whole sum would be 423,600l.?"—Yes." That is the next question—"The whole amount is 423,600l." That is where I got my statement from.

(Mr. Balfour Browne.) All I can say is, he left out the obsolete works.

(Mr. Claude Baggallay.) It is more than 50 years old.

(Mr. Balfour Browne.) You say that that was done in 1845, and that you do not want to go back behind that Act.

(Witness.) I say we cannot go behind it.

25,142. That is what you said?—I cannot go behind that Act.

25,143. Suppose there were some works worth 5,000l., we will say, in existence in 1845, and they have been burnt down and never replaced and they do not exist to-day, why should not your capital be rectified again?—I imagine if they had been burnt down, they would have had to be rebuilt out of revenue.

25,144. Are you aware that a great many of your things have not been replaced at all out of revenue and do not exist to-day?—No.

25,145. Take, for instance, buildings. Do you know that you are paying interest on buildings that were destroyed so long ago, as I think, 1807?—I know nothing at all about that.

25,146. If you are, do you not think it would be quite a fair thing (not at present, because it does not really matter until you come to your 10 per cent. but if you were coming near your 10 per cent. for Parliament to say: "You shall not pay interest upon capital that has disappeared?"—Not such capital as that. Parliament settled all that in 1845 and again in 1847.

(Mr. Littler.) That is not what the Waterworks Clauses Act said. It said: "On the capital raised."

(Mr. Claude Baggallay.) On the capital raised.

(Mr. Littler.) Not on the capital expended or existing.

(Witness.) I am quite content to accept the decision of Parliament in 1845. I will not go behind it. I cannot go behind it.

(Mr. Balfour Browne.) That is what you said before, and I pass from it.

(Mr. Littler.) "Interest on the paid-up capital" are the words of the Act.

25,147. (Mr. Balfour Browne.) You said distinctly that where you are replacing works the difference between the old and the new was carried to capital and what represented the old was taken to revenue account?—Certainly.

25,148. Will you show me in your accounts one specific instance of that?—I suppose it would be necessary to have all our ledgers here and day books to show you that.

25,149. Are you aware that when the auditor came into existence in 1871 he said this. This is the first report: "As regards the Southwark and Vauxhall Company, after lengthened investigation I have come to the conclusion that capital should be relieved of 33,082l. 8s. 8d., and the accruing revenue be charged therewith in addition to the outstanding

"claim of 10,722l. of Messrs. Harvey having been brought into charge." Therefore, apparently up to that date he found that you had charged wrongly to capital, 33,000l., and he relieved capital to that extent?—And that conclusion of the auditor was carried out by the company, and it was paid by annual instalments spread over a certain number of years.

25,150. But before that date you had been charging to capital account to the extent of 33,000l. what should have been charged to revenue?—It was done in those days; it would be impossible to do it now.

25,151. Is it not the fact that quite recently Mr. Stoneham and you have had a dispute about relaying a main, and that you claimed to put to capital the whole of the expense of making the main—which had been improperly laid in the first instance—water-tight?—You must put it on the right ground. The main had not been improperly laid, as the learned counsel says. It had been laid according to the best knowledge and information and best advice we could get from the engineers and others interested; but it being an extraordinarily large and heavy main—such a one as had never been laid before in the London district—the weight of it and the nature of the sifting gravel, and some shifting of the soil in some parts of the country that it was laid through, caused it to show a slight weeping at some of the joints. That was all: and on that question of repairing this weeping a difference arose between ourselves and the Government auditor, and that difference was settled and agreed to in a manner which satisfied the Government auditor, although I felt that I was paying a much larger sum out of revenue than I ought to have been called upon to pay under the circumstances.

25,152. You wanted to put it all to capital. I find at page 229 of the 27th Annual Report of Mr. Stoneham to the Local Government Board: "But additional expenditure to remedy leakages in the same main has since been incurred elsewhere, and further consideration of the circumstances and of the Act of 1897 raises the question whether Parliament, having defined the works in Middlesex rendered necessary by such leakages by the words 'repair and make good' which the company allege are for the purpose of improving and strengthening the main, this definition is applicable to the other parts of the main in the county of Surrey, and is binding on me as auditor in respect thereof. In other words, whether I, as auditor, am bound to apply the parliamentary definition of works in Middlesex to works of a precisely similar description carried out for a precisely similar purpose in Surrey." Now, is it not the fact that he made you carry to revenue account 1,700l.?—That only shows the excellent supervision that exists, and how impossible it is for us or any other company to carry to capital a sum which we ought not to do.

25,153. It shows the necessity of some control?—We have that control in the Government auditor, and it was proved to be effective.

25,154. And it was proved absolutely necessary because when the control came into operation he made you transfer from capital to revenue, 33,000l.?—That was a matter which was fairly open to argument and consideration. It was argued and considered, and his decision was accepted by the company as binding, and I say it shows how thoroughly efficient that control is in that respect.

25,155. Can you tell me how deep your pipes are laid? Is it not the fact that they are so near the surface that you suffered very much in the frost when you ought not to have done so if the mains had been properly laid?—Some of our mains are nearer the surface than the experience of the heavy frost of 1894 shows that they ought to be. We are gradually lowering those mains, and we are proceeding with the lowering. Some of them were originally laid too shallow, but a great number of them have been brought nearer the surface by the operation of the local authorities in lowering the surface of the roads.

25,156. Will you tell me whether the main I was speaking about just now, with regard to the surcharge of the auditor, was laid with the advice of your engineers in a way that failed?—It was laid with the advice of our engineer, and also with the experience of Messrs. Aird & Sons, the contractors, who, I suppose, have more experience than anybody in the world in such works.

25,157. Was not the failure because you were attempting to do it too cheaply?—Certainly not, and it is very unfair to make such an imputation.

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25,158. Would not the expenditure of a very small sum upon each joint have prevented all the leakage?—It could not possibly be known what would be the effect of laying that main in the soil in which it was laid in those parts.

25,159. What was the year in which it was laid?—We used the most expensive joint which was known, as regards expense; and we thought it would be more efficient; but it did not turn out to meet the requirements of the weight of the mains, and so on.

25,160. Going back in your evidence, you said that you thought that the sort of arbitration should be what has been customary in other places?—Customary under similar circumstances.

25,161. That is in other places, I suppose. Has there ever been a case where eight companies with overlapping districts have been bought up, or where even two companies with districts overlapping have been bought up?—Not that I know of.

25,162. Therefore, there would have to be some special consideration in this particular case of the circumstances of each company, would there not?—No, I do not think so, because the circumstances of each company are in no way different from the circumstances in the case of other companies which have been bought up by other municipalities.

(Chairman.) If it is admitted that the arbitrator must proceed upon an inquiry based upon the income and its permanence, I do not see what the overlapping has to do with it.

(Mr. Balfour Browne.) Because it clearly affects the permanence—the possibility of another company competing.

(Chairman.) You mean the possibility that West Middlesex would come into Wandsworth may affect the income of the Southwark and Vauxhall.

(Mr. Balfour Browne.) It might.

(Chairman.) We have just heard that it would be ludicrous for the West Middlesex to attempt it.

(Mr. Balfour Browne.) I do not agree, my Lord, that it would be ludicrous.

(Chairman.) Very well.

(Mr. Balfour Browne.) I think, for instance, if the West Middlesex were allowed to raise more capital it would be far from ludicrous; it would probably be a most remunerative thing to get this 11,000*l.* a year.

(Mr. Claude Baggallay.) Perhaps you do not know that the only effective route by which the West Middlesex could be got into this district for the purpose of supply has been taken away from them by Parliament this year?

(Mr. Balfour Browne.) I do not know anything about it.

(Mr. Claude Baggallay.) I do, because I was in the Bill. Parliament took it away from them under the Kew Bridge Bill of this year, after listening to all the circumstances.

(Mr. Balfour Browne.) Mr. H. L. Cripps says it is not so.

(Mr. Claude Baggallay.) Mr. Cripps does not know. I was counsel for the Bill.

(Mr. Balfour Browne.) My friend must not give evidence.

(Chairman.) We have had this spectre, if I may so call it, of competition paraded before us many times, but I want to get hold of an explanation why no human being of all these competing companies has ever competed.

(Mr. Balfour Browne.) They have, my Lord, as a fact.

(Chairman.) Not since 1821.

(Mr. Balfour Browne.) This company is competing with another in its own district in certain streets to-day.

(Witness.) My Lord, I deny that statement. There is no such thing as competition existing at the present day.

25,163. (Mr. Balfour Browne.) Is it not the fact, that in certain streets there are your pipes and the pipes of another company, and that I, if I choose, can cut you off and get the other company's water?—That is not the case.

25,164. Nowhere?—No.

25,165. In no street?—Now, pray understand me. I do not say that there are no streets where both mains are laid.

25,166. And I can get the water from whichever I choose?—Let me finish. I listened to you with great pleasure, and I should like you to listen to me. What I say is this. There are streets where the mains of both companies are laid, but there is no street in which the companies are in competition as regards supplying the houses, because, I think, it is since 1852 neither company has laid a main parallel with a main of the other company. Therefore there is no idea of competition.

25,167. Is it not the fact that in those streets, a man living in one house can have either your supply or that of the other company?—No, because if he is well supplied by the Lambeth Company he cannot call upon us to supply him under a section in our Act of Parliament.

25,168. (Chairman.) Possibly he cannot compel you; but you might supply him if you chose. We had it proved—I do not know how many months ago—that there was a little district where the Southwark and Vauxhall and Lambeth did really overlap, both having a main in the same street?—As regards the crude proposition it is so, but the companies have decided that they will not compete with each other in that way.

25,169. I assume, until I am convinced to the contrary, they have decided that because they find it disadvantageous to compete?—It was more on account of the disturbance caused in the streets when they were competing, and the inconvenience to the public, that it was discontinued.

25,170. (Mr. Balfour Browne.) Is it not the fact—merely to illustrate that—that Walton Road and Sarsfield Road are both in your district?—I cannot carry my mind to that. I take it it is so, if you know it.

25,171. Are they both being supplied by your Company and the Lambeth Company to-day?—I cannot answer that question.

25,172. I have got the demand notes from the Lambeth Company?—Of course it could be found out if it is so; but I cannot answer it.

25,173. Is it not the fact, as stated by Mr. Haward, that the saving in the directors' and others expenses would amount to something like 50,000*l.* a year, if purchase took place?—No, I do not think it is a fact.

25,174. Are you aware that Mr. Smith, in his calculation, calculated that it would amount to 96,000*l.*?—No, I am not aware of that.

25,175. Now, as to management. You said there was some question of management that would make transfer inexpedient; have you got the names of the directors of your company here?—I can give them to you from memory.

25,176. I will take one: I think my learned friend Sir Harry Poland is a director of your company?—No, he is not, indeed.

25,177. He is of one of the companies?—He is a director of the Lambeth Company, I believe. No, Mr. Hollams informs me he is a director of the Chelsea Company.

25,178. I daresay you know he is also on the London County Council?—He was; I do not know that he is now.

25,179. He is an alderman still?—Very well.

25,180. Do you mean to say that what the companies are capable of doing, committees of the London County Council could not do?—I do say so; they could not do it.

25,181. And you are a specimen?—I should be very pleased indeed if you think me a good one; I am flattered.

25,182. I did not say that; I leave that to be judged by the Commission. Now there is just one thing I want to put to you. I think you know that, under Mr. Smith's award, you would have come to the full annuity about eleven years ago; is not that so?—I take it from you that it is so. I cannot recollect, of course.

25,183. And the full annuity under his agreement amounted to 99,640*l.*?—I will take it from you it is so.

25,184. If you multiply that by eleven, that comes to 1,096,040*l.*?—Yes.

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25,185. Are you aware that your net profits in those eleven years instead of being over 1,000,000*l.* have been only 669,000*l.*?—I will take it from you.

25,186. Therefore you would have got, if that agreement had been entered into, 427,035*l.* more than you have actually put in your pockets?—Yes. But then since that time when Mr. Smith entered into this agreement, things have occurred which have materially affected the income of the company which were unknown to Mr. Smith and were never presumed to come into existence.

25,187. Admitted?—Very well. I will take your figures, if you please. You have placed it at a little over a million.

25,188. 1,096,000*l.* in eleven years?—I wish to state that the decision in Dobbs' case by the House of Lords and the consequent reduction of rateable value on that decision involved the company in a loss of 30,000*l.* per annum. Now if you capitalise that 30,000*l.* by 33 years' purchase, you will find it will come to somewhere about the million pounds which you mentioned, which proves that Mr. Smith's calculations were strictly correct.

25,189. It amounts to something like 38,820*l.* per annum too much, you would have got under that agreement?—Not in accordance with the data and the facts on which the conclusion was come to. It is in consequence of the alteration in circumstances which could not then have been foreseen.

25,190. That only shows that Mr. Smith did not take into account—could not, perhaps, take into account—the difficulties that you have had to contend with. At the present time have you got capital commitments that will involve your raising, when all the money is spent, some 35,000*l.* more per annum? I have taken the capital commitments at 3 per cent., which is the very lowest, I think?—Yes, but that will come upon us quite gradually.

25,191. How long will it take you to carry out all those works?—I should think, to carry out the whole of our capital commitments would take about ten years.

25,192. Your total income just now is only 70,000*l.* or thereabouts; what are your total profits?—A good deal more than that.

25,193. The net profits?—A good deal more than that.

25,194. I think you will find your net profits are about 70,000*l.*?—Our net profits for 1897 were 70,101*l.*

25,195. That is about what I said?—That is right then.

25,196. If your new commitments add 35,000*l.*, even at 3 per cent., in ten years, your dividend may again go down, as it has gone down in the past?—No, because the greatest possible rate at which we can carry out these commitments and construct these works cannot entail a payment of interest anything like equal to the increase in the revenue derived from our district.

25,197. I do not follow that at all?—Do you not? Then I will give you an example. Suppose we pay 3,000*l.* a year for new capital issued, and the increase in our district is 6,000*l.* a year, that shows we have 3,000*l.* to spare for increased dividends.

25,198. You have had no such increase in the last ten years as would pay interest at 3 per cent. upon the large commitments you have got, which is 35,000*l.* per annum?—Why do you say that?

25,199. Will you tell me what your net income was ten years ago?—Yes, our net income in 1887 was 62,000*l.*

25,200. And now it is 70,000*l.*?—Yes.

25,201. That would not pay the interest of 35,000*l.* upon your commitments?—But there are a good many other things to come into consideration. I can only tell you this: We deal with the gross increase in our revenue, and the gross increase in our revenue is infinitely more than the amount of interest we have had to pay on the expended capital.

25,202. (Chairman.) In the eight years you only make it, as far as I can see, 2,000*l.*?—In 1887 it was 62,000*l.*, but you must not forget that since 1887 we have had a good many things to contend with which have damaged our revenue—for instance, the great frost of three years ago.

25,203. You may have another great frost in 1899 or 1900?—We never experienced such a frost before as we had in 1895. That cost us 36,000*l.* out of revenue. We have had to pay that, and make that good. If that had not occurred, our revenue now would be immensely more than 70,000*l.*

25,204. What was your revenue the year before the frost?—I see in 1895 it went down to 47,000*l.* The previous year it was 62,000*l.* That frost damaged us to that extent, or else our revenue now would have been infinitely larger. There is no doubt about the fact—whatever Mr. Balfour Browne's instructions may be—that we have an increasing income largely in excess of the calls upon us for the issue of new capital.

25,205. (Mr. Lewis.) The net profit in 1897 was just the same as in 1890, showing that there has been no increase of the net profits during that period?—You will notice, if you look, that in 1890 it was 70,000*l.*, and in 1891 it fell down to 58,000*l.* As for the reason of that, there must have been some extraordinary payment made which I cannot tax my memory with.

25,206. (Mr. De Bock Porter.) In 1883 it was 80,000*l.*?—It was 80,436*l.*

(Mr. Balfour Browne.) The highest it had ever reached.

25,207. (Mr. Pember.) That was before the Dobbs judgment?—That was before the Dobbs judgment. As I have told you, we have had to catch that up. After the Dobbs judgment we went down to 53,000*l.* and 54,000*l.* in 1886.

25,208. (Mr. Balfour Browne.) I see in 1890, at any rate, it was 70,098*l.*, then 58,763*l.*, then 65,000*l.*, then it went down again to 60,000*l.*; 62,000*l.*; and in 1895 to 47,000*l.*; and in 1896 to 49,000*l.*; and this year it is 70,000*l.*?—Yes.

25,209. So that looking at it from 1890 down to the present time, there is no increase really at all?—No, but as I said before, there are so many things to be taken into consideration which you are not instructed about, or which you have overlooked. For instance we keep on issuing debenture stock, and debenture stock has been issued all these years at the rate of 100,000*l.* a year. All that interest has to come off the gross profits before you get at the net profits. Therefore, of course if you will add the interest we are now paying on the debenture stock to the 70,000*l.*, then it would be a fair comparison.

25,210. So would the 35,000*l.* a year have to come off before you divide it?—There would be so ultimately more than, because we have issued debenture stock at the rate of 100,000*l.* a year for some years which represents 3,000*l.* per annum for interest; take that for five years, that means 15,000*l.*; and that added to the 70,000*l.* would make our revenue now 85,000*l.*

25,211. Do you know how much that main I was asking you about cost originally and how much you had to spend to make it good?—I cannot give you those figures. They can be obtained, of course.

25,212. Do you remember when it was laid?—In 1891, I think.

25,213. Cannot you tell me what it cost then, or if the engineer is coming I will ask him?—He would be able to tell you—I cannot.

25,214. (Chairman.) Can you tell us what your net profits were in 1898—last year?—69,814*l.*

25,215. That is a drop again?—That is to be explained. They would have been a great deal in excess, but we had to pay an award of the Public Auditor in regard to making good the 42-inch main out of revenue, which I think made a difference of something like 6,000*l.* That was an extraordinary charge, which had to come out of revenue. Then there were 3,000*l.* extra interest on debenture stock, that is 9,000*l.*—9,000*l.* against the 70,000*l.* in 1897, so that really, but for those items, our net income in 1898 would have been 79,000*l.*

25,216. Can you explain why in 1896 it was only 49,000*l.* and jumped up to 70,000*l.* the next year, 1897?—Yes.

25,217. It seems to have been a fluctuating income?—I think in 1895 and 1896 we were paying off the expenditure on account of the great frost. I have told you that cost 36,000*l.*, or about 18,000*l.* a year.

25,218. I do not know whether you appreciated the object of the questions that Mr. Balfour Browne put to

you, which was, as I understand it, this: you are deriving a certain income now from Wandsworth and these competitive districts?—Yes.

25,219. Do not you think it would be reasonable that the arbitrator should cut down something in the value of that income, because there is a chance of the West Middlesex coming in, competing with you and taking it from you?—I do not think so, because there is no chance; as Mr. Claude Baggallay has explained Parliament took away from them the only means by which they could have done it.

25,220. You mean to say Parliament has left no means by which the West Middlesex can go into a district which is their statutory district?—Except by another Act of Parliament. They cannot come into it unless they come in the way that Mr. Claude Baggallay intimated, and therefore they would want another Act of Parliament.

(Lord Robert Cecil.) I do not desire to ask any questions, but I think it is only right that I should say, on behalf of Hertfordshire, that we do feel a profound distrust of Sir Henry Knight's scheme of federation, and that we feel it would be most unlikely that under such a scheme we should be any better off than we are at present. It is only to guard ourselves that I mention this; I do not desire to elaborate it.

Re-examined by Mr. CLAUDE BAGGALLAY.

25,221. Your attention has just been drawn to the fact that for 1897 your net profits were only 8,000*l.* in excess of those of 1887?—Yes.

25,222. I see that your gross profits in the same period increased by 31,000*l.*?—Yes.

25,223. Now will you turn to E. of that same return. I see there that taking interest on debenture stock in the second heading, the interest payable on that stock increased from 1887 from a figure of something under 21,000*l.* to nearly 44,000*l.*?—Yes.

25,224. So that your charge for interest on debenture stock increased in that same period by something like 23,000*l.*?—That is the fact.

25,225. That 23,000*l.*, added to the 2,000*l.* increase in your net profits from 1887 to 1897, makes 31,000*l.* increased gross profits?—That is so.

25,226. So that your increased net profits of that period from your business done enabled you to meet all your capital charges—all the charges on your increased capital—during that period to the extent of an increase of 23,000*l.* a year, and to leave you a net increase of 8,000*l.* beyond?—That is the absolute fact.

25,227. With regard to the fluctuations in the meantime, I do not think we need dwell upon them. There were such matters as the severe frost, and things of that sort, which caused temporary fluctuations, as you pointed out?—Certainly.

25,228. Now, I am not going to follow you through that cross-examination about Mr. Smith's agreements. I suppose you do not care now whether the agreements were good or bad. What you are concerned with is this: that, supposing you have to be sold to-day, you should have your full value as it is to-day?—Most certainly.

25,229. Plus anything that you are justly entitled to with regard to future increment or back dividends, and so on; it has nothing to do with Mr. Smith's agreement?—No, that is dead and gone; although, unfortunately for the public, it was allowed to go.

25,230. I am not going to follow that now. Then, with regard to this question of debiting capital and revenue, as the case may be, with expenditure, do I understand that your company, as far as you can do, always charge to capital or to revenue, as the case may be, any expenditure which they make in the first place?—Certainly.

25,231. Is that subject, and has it been subject, ever since 1871, to the audit and criticism of Mr. Stoneham?—Yes, and also to the company's auditors as well.

25,232. Therefore, the company's auditors would, necessarily, have a first interest in seeing that the expenses were properly allocated?—Most assuredly.

25,233. But then comes Mr. Stoneham, after that?—Yes.

25,234. Who elect your company's auditors?—The shareholders.

25,235. Do the directors appoint them in any way at all?—Not at all.

25,236. The shareholders themselves elect them?—Yes, and re-elect them every year.

25,237. They are re-elected every year?—When they go out of office.

25,238. Is there an effective audit?—Thoroughly effective.

25,239. Now, with regard to Mr. Stoneham, is it the fact that Mr. Stoneham, since he first of all began to audit your accounts in 1871, has frequently called attention to various matters of allocation, as between revenue and capital?—Occasionally, he has; I cannot say frequently. But whenever he has thought it necessary to do so, he unhesitatingly does it.

25,240. Have you ever resisted him in any allocation which he has said should be made; that is to say, you might have argued it with him. But have you ever refused to accept his allocation, when he finally insisted upon it?—We have always accepted it; except in one instance, when we went to arbitration before Sir Richard Webster.

25,241. There was one case where you and he could not agree; and, in that case you went to arbitration, and it was decided by Sir Richard Webster?—I beg your pardon. The case that went before Sir Richard Webster was not upon the question of expenditure; it was upon the question of the interpretation of the sinking fund.

25,242. Then, as a matter of fact, you have never yourself been taken by Mr. Stoneham before an arbitrator?—No.

25,243. Have you always, eventually, given effect to Mr. Stoneham's allocation?—Certainly.

25,244. Now, with regard to this question of mains, you said just now that some of your mains have been found to be too shallow; was that the experience of that great frost of 1895?—Yes.

25,245. Prior to that, were there many mains which worked well enough for years and years, but which were shown by that frost to be too shallow?—Yes: mains, which had never frozen for any number of years before, were frozen then, in that case.

25,246. Since that time you have been relaying all those?—We keep on relaying them as occasion arises; a certain quantity every year.

25,247. (Mr. De Bock Porter.) Is that charged to income or capital?—A small proportion is charged to capital.

25,248. (Mr. Claude Baggallay.) That is where you have enlarged them?—No, a small proportion is charged to capital, on account of the increased depth of them; because you get value for that in protection.

25,249. On that question of obsolete capital, as I understand it, do you contend that, at the present moment, you have no obsolete capital?—I do, indeed; because I know of nothing.

25,250. Take this land and these works down at Battersea; they are in partial use at the present time, are they not?—They are in full use at the present time.

25,251. They are not used for their original purpose?—Yes, I think they are.

25,252. You had intakes there before 1852?—They are not used for intakes, of course; but then that is a very small part.

25,253. But you have some works at Battersea now, and some land, have you not?—Yes.

25,254. Is that land now greater in value or not than it was when it was acquired?—I should think it is enormously greater in value than it was when it was acquired. I cannot recollect what it cost when we acquired it.

25,255. I think it was about 250*l.* an acre, if I remember rightly; at all events, it was something insignificant, compared with its present value?—Quite insignificant.

25,256. Therefore, that is a very valuable asset of the company?—Most assuredly.

Sir H.
Knight,
7 Feb. '99

Sir H.
Knight.

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25,257. And is it that land, or some portion of it, or these works on that land, which it is contemplated to utilize under that scheme of inter-communication which was before this Commission a little while ago?—Yes, it is all those works and all that land which is left.

25,258. And does all that land stand in the company's books at the present time at the original capital price?—Most certainly, yes.

25,259. Do you know at all what the value of that land is at the present time?—Yes, I have an idea, but I do not know whether it is prudent to state it, because it is in the market and we are selling it by degrees.

25,260. It is safe to say it is many thousand pounds an acre?—A good many thousand pounds. Sales have taken place at a good many thousand pounds an acre.

25,261. Therefore, supposing it came to a question of considering what obsolete capital there might be in the concern, it would also be necessary, would it not, to take into consideration what assets there are in the concern which have vastly increased in their value to set off?—You must do that. If you conduct your business on that principle, you must write up what I should call the value of your stock, whatever it has increased in value, which I hold to be a wrong commercial principle.

25,262. Then that would greatly outweigh, would it not, anything which would be written off on account of obsolete works?—As I said before, I cannot think of anything to write off for obsolete works; but if there were anything to write off for obsolete works, this would far outweigh it.

25,263. Some questions were put to you as to whether it was not a proper thing in a business of this sort to have a depreciation fund. Of course, we know it has not been required in your Act, or in the General Act, or in the case of any water companies, or gas or railway companies. But, as a matter of fact, take the case of a main which was put to you, that main goes on in the ground, does it not, for many years if it is undisturbed?—Yes.

25,264. You cannot tell what is going to be the life of that main until the occasion arises for you to have to move it?—No.

25,265. To put in a bigger one, or at least it is generally for the purpose of putting in a bigger one?—Then, I think, the engineer would tell you that he has never yet discovered a main under such circumstances that was not in a perfectly good condition for its purpose.

25,266. In fact, the life of a water main in the ground is practically a perpetual life unless you have to disturb it for the purpose of moving it somewhere else, or for putting in another and a bigger one?—That is my impression, and is the result of my experience.

25,267. Then what you do is to deduct from the cost of putting in the new main the amount which the main

taken up had originally cost and charge that amount to revenue?—That is so. That amount is charged to revenue.

(Mr. Lewis.) How is it in the case of the New River Company?

25,268. (Mr. Claude Baggallay.) I am asking the witness about the Southwark and Vauxhall Company. Although I do appear for the New River Company, I am on the Southwark and Vauxhall at the present moment. (To the witness.) However, that is what you do. Then the amount which you so charge to revenue equals the aggregate of the amounts which you would have had to put by for the depreciation fund if you had had any system on which you could fix the depreciation fund?—I suppose it would, yes.

25,269. That is what it practically comes to?—Yes, it does.

25,270. That really corresponds to what you would have had to provide by way of depreciation fund if you had provided one?—Yes, that must be so.

25,271. That is what it comes to?—Yes, it does.

25,272. It is only another form of arriving at the same result?—I think so.

(Mr. Pember.) Mr. Francis says the New River Company do exactly the same thing.

25,273. (Mr. Claude Baggallay.) They act on exactly the same principle. (To the witness.) Now there is only just one other question I would like to ask you about, and that is this question of assessment. The assessment on your buildings can only form a very insignificant part, can it, of your assessments of your whole undertaking for the purpose of rates?—Yes.

25,274. It is only a very insignificant part?—It must be so.

25,275. The great bulk of the rates which you pay have to be paid upon the assessable value of the undertaking as a revenue-earning concern, and not merely upon the buildings?—I think that is so.

25,276. With regard to the buildings, I take it they are as capable of housing a tenant, whether hypothetical or otherwise, and they are equally capable of earning a rent, whether they are old or new?—I do not quite follow you.

25,277. Your buildings are equally useful for the purpose of earning a rent, whether they are old buildings or new?—Yes, certainly.

25,278. You keep them in repair and you keep them up to date?—Keep them thoroughly in order and up to date.

25,279. And therefore their age does not in any way affect their assessable value?—So I find.

The witness withdrew.

[Adjourned to Monday next at 12 o'clock.]

FIFTY-FIRST DAY.

Monday, February 13th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

Sir JOHN EDWARD DORINGTON, Bart., M.P.
 Sir GEORGE BARCLAY BRUCE, Kt., C.E.
 ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
 HENRY WILLIAM CRIPPS, Esq., Q.C.
 ROBERT LEWIS, Esq.

CECIL OWEN, Esq., Secretary.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.
 Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
 Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. JAMES WILLIAM RESTLER, recalled and further examined.

Mr. J. W.
Restler.

13 Feb. '99

25,280. (Chairman.) We have heard already, Mr. Restler, that you are the engineer to the Southwark and Vauxhall Water Company, and have held that position for 16 years?—Yes.

25,281. The area of your district is 50½ square miles?—That is so.

25,282. With an estimated population of 819,901 people?—Yes, in December 1898.

25,283. The West Middlesex, the Lambeth and the Kent Companies have power to supply ever portions of your Parliamentary area?—Yes, that is so.

25,284. Indeed I believe as much as four-fifths of your area is within the area of the Lambeth Company?—Yes, that is so.

25,285. Have there been any pipes laid in the same streets by two companies in your area since the year 1852?—No; I think I am correct in saying that there has not been an instance.

25,286. Has there been any competition at all in fact since that date between you and the other companies that overlap your area?—No, the houses that were supplied in 1852 on each company's system have practically remained the same throughout. We have pipes, of course, parallel in the same streets which were laid prior to 1852, perhaps there may be individual cases in each of those streets, where adjoining houses, one supplied by the Southwark and Vauxhall, and one supplied by the Lambeth exist, but those have not been duplicated or extended since 1852.

25,287. You do not know, I suppose, whether the Lambeth makes any difference in its charges in those streets in which it is supplying alongside of you?—Yes, I think the Lambeth rates and ours are the same in the joint districts.

25,288. (Mr. De Bock Porter.) They have brought their rates down to your level?—Yes, that is so; at least, it is hardly a case of bringing it down; their rates have always been the same as ours in the joint district.

25,289. Were you there first?—That has varied. In the old days of competition it was a sort of race for the various streets; in some cases we should have been there first, and in some cases the Lambeth, but the same rate has applied in both cases.

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25,290. (Chairman.) Then competition has reduced their charges where they came in contact with you?—Yes, there has always been that one rate. The Lambeth Company do not charge the maximum rate in the joint district—at least, so I believe.

25,291. (Mr. De Bock Porter.) But there is no difference in your rates there and elsewhere?—No, ours is the statutory scale throughout.

25,292. (Sir John Dorington.) By joint district you mean only those streets in which both companies' pipes are laid?—Yes.

25,293. You do not mean the four-fifths of your district?—No.

25,294. Only the streets in which the pipes of both companies are actually laid?—Yes, the streets that were practically piped before the 1852 Act.

25,295. (Chairman.) I gather that you have some section in your Act of 1884 authorizing you to enter into agreements against competition with other companies?—The Lambeth were not in Parliament in 1852, so that the clause limiting competition was not inserted in their Act; therefore in 1884 when we went to Parliament for a private Act of our own that omission was remedied by clause 23.

25,296. Then read it please?—"With respect to any parish other than the parish of Lambeth district or place in which the Company and the Lambeth Company respectively supply or are authorized to supply water the Company and the Lambeth Company may at any time after the passing of this Act and from time to time enter into any contracts or agreements and may also from time to time vary alter or rescind any such contracts or agreements and enter into other contracts or agreements for the purpose of determining which parts of such parishes districts or places aforesaid shall be thenceforward supplied by the Company and by the Lambeth Company respectively and such agreements may include provisions with respect to any acts deeds matters or things incidental to such supply. Provided always that no such contract or agreement shall in any manner interfere with or affect the duties and the responsibilities of either company towards consumers of water or the public or the rights and interests of such consumers of water or the public as against either company."

Mr. J. W. Restler. (Chairman.) That proviso seems to me to nullify the clause.

13 Feb. '99 (Mr. Balfour Browne.) Unfortunately, when the clause was put in, my Lord, they did not put in the proviso. If you look at the return which was put in at Question 25,092, you will find the clause without the proviso that Mr. Restler was reading just now. Sir Henry Knight put it in without the proviso, by mistake, of course. Mr. Restler has read the whole of it perfectly fairly.

25,297. (Chairman.) Two things strike me on this clause; in the first place, that this clause enures to the benefit of the Lambeth Company as well as yourselves. It enables the Lambeth Company to enter into any contracts or agreements?—Yes, it does.

(Chairman.) We were told that the Lambeth Company had not the protection of any such clause.

(Mr. Claude Baggallay.) Not at the time, my Lord, when all the other companies got that proviso in 1852. The Lambeth had been in Parliament in 1848.

(Mr. Balfour Browne.) 1847.

(Mr. Claude Baggallay.) And they did not have that proviso, but in 1852, when the other companies were all in Parliament, or, rather, all the companies who were in in that year, a proviso was put in at the end of section 47 of the Act of 1852, the last proviso of section 47, protecting the companies who were then in Parliament from having to compete, but Lambeth were not in Parliament then, and, therefore, they did not have that.

(Chairman.) No, but this clause in the Act of 1884 enures to the benefit of the Lambeth Company as well as the Southwark and Vauxhall Company.

(Mr. Claude Baggallay.) It does, my Lord; it gives Lambeth, part of what the Southwark have already got.

(Chairman.) It enables the Lambeth Company to enter into agreement not to compete.

(Mr. Claude Baggallay.) Yes, but then, of course, it is subject to the qualifying proviso at the end of the section.

(Chairman.) But then that proviso, as I said before, seems to me to do away with the whole clause; the consumer of water has a right under the general law to call upon any company to give a supply of water, and it is provided that no contract shall interfere with that.

(Mr. Claude Baggallay.) Therefore the Lambeth are still as they were as regards that.

(Chairman.) And the Southwark and Vauxhall are still as they were.

(Mr. Claude Baggallay.) But the Southwark have got the advantage already of the proviso to section 47 of the Act of 1852, and it excludes section 35 of the Waterworks Clauses Act. If you look at the beginning of the Act of 1852—I think it is section 3, where the Acts are incorporated—you will see section 35 of the Waterworks Clauses Act, which gives the right to consumers to call upon the companies to supply, is excluded from incorporation. I am not sure that it is section 3 of the Act, but I think it is, speaking from memory.

25,298. (Chairman.) Have you since 1884 entered into any agreement with the Lambeth Company or with any other company?—No, there was no actual arrangement, no agreement made; the old understanding that we should not compete has always remained.

25,299. (Mr. H. W. Cripps.) Does that apply to the West Middlesex also?—There is no agreement with the West Middlesex at all, and never has been.

25,300. (Chairman.) You do not compete with them?—No.

25,301. (Mr. H. W. Cripps.) It remains, from what you say, a sort of custom among you that you will not compete?—That is so; but the West Middlesex have neither the mains nor the machinery, nor any of the appliances on the Surrey side to afford a water supply.

25,302. But they have the power?—They have the Parliamentary power.

25,303. (Major-General Scott.) Your protection against the consumers asking that company to come in and compete with you is the fact that the Lambeth rates are higher, I suppose?—It would not be to the interests

of any consumer to call upon the Lambeth Company to come in and compete with you, because the Lambeth rates are higher?—Exactly, that would be so.

25,304. (Chairman.) But would it be to the interests of the consumer to call upon you to compete with the Lambeth?—Yes, but then, of course, the Act of 1852 prevents that.

25,305. You are protected against being called upon to compete?—Yes.

25,306. I do not quite see then, what this section of the Act of 1884 does?—That was put in the proof, because there was a suggestion that these agreements were behind the back of Parliament; that it had never been suggested to Parliament that such agreements were in force. I referred to them as a distinct reference to show that Parliament had, in that Act of 1884, inserted the clause to deal with that point.

(Mr. Claude Baggallay.) Might I say one word, my Lord, as to what the effect of that section of the Act of 1884 might be. I think it might be this: The Southwark were already protected by statute from being called upon by the public to compete where Lambeth is supplying, but the Lambeth were not so protected. Then it says the Lambeth and the Southwark may, *inter se*, enter into agreements restricting themselves, but they are not to enter into any such agreement so that the Lambeth shall be able to defeat the rights of the public, but unless the Lambeth are called upon by the public to compete with the Southwark, then the Southwark would be able to stop the Lambeth on the ground of breach of agreement—that is to say, the Southwark could prevent the Lambeth, after entering into an agreement acting in breach of that agreement, unless the Lambeth were called upon by the public to supply in competition with the Southwark. That is really what it comes to.

(Sir John Dorington.) Nobody can call upon the Southwark, but the public can call upon the Lambeth?

(Mr. Claude Baggallay.) Yes, it leaves the public the right to call upon the Lambeth.

(Sir John Dorington.) The Southwark being protected by the Act of 1852?

(Mr. Claude Baggallay.) Being protected by that Act of 1852, and being protected as against the Lambeth under this Act also, unless the Lambeth are moved by the public.

(Mr. De Bock Porter.) But the public are prejudiced by the agreement between the two companies?

(Mr. Claude Baggallay.) That is rather a question of fact, is it not, Sir? At all events Parliament has thought fit to allow it.

(Chairman.) The chief value of this section, from your point of view, is that it is a parliamentary sanction to agreements against competition?

(Mr. Claude Baggallay.) That is so, my Lord.

(Witness.) The public would hardly be prejudiced, my Lord, I think, because, of course, if the Lambeth were to be called upon to supply, they would be entitled to their statutory rate, which is 2 per cent. higher than the Southwark.

(Chairman.) As I understand, the West Middlesex never had any plant or pipes in the parish of Battersea?

(Mr. H. W. Cripps.) Is that so, that they never had any? (To witness.) You say there are none now?

(Witness.) Never in the parish of Battersea. The West Middlesex plant and pipes are on the Surrey side, and solely confined to unfiltered water between Hampton and Barnes, and filtered water under no pressure on its way to the engines at Hammersmith. They have never had filtered water under pressure on the Surrey side at all.

25,307. (Chairman.) At the present moment, as I understand, the parish of Battersea is divided between you and the Lambeth?—Yes, that is so.

25,308. They supply part, and you the other part?—Yes. They came in from one end of the parish and we from the other, and when the pipes met, they terminated.

25,309. With regard to the complaints as to the quantity or quality of your supply, are they numerous or not?—They are excessively few. Last year they averaged about 1·71 per day over the whole district.

25,310. That is 1·71 in how many people supplied?—I have put the results in this table, which I will hand in. (The witness handed in Table. See Appendix V, 9.)

25,311. (Chairman.) This seems a very elaborate table?—Shortly, it represents that there are 1·71 complaints in 816,894 persons, that is, practically, one in every half million persons supplied.

25,312. Were those complaints of quantity or of quality?—I think there was only one complaint in the whole of the year about quality, and, at all times, they are very rare. For many years there are no complaints at all.

25,313. (Mr. Claude Buggallay.) But this table includes all, I think?—This table includes all. They would practically be all complaints of short supply, and I think there is only one complaint as to quality in the whole of the year.

25,314. (Chairman.) Did your supply fall short last year?—No, not at all.

25,315. Were those complaints groundless complaints, then, or not?—They were all capable of explanation at the time. In ninety-nine out of every hundred they practically arose from defective fittings, or from ball cocks set up, or from some local derangement of that sort.

25,316. You were not only supplying your own district, but you were lending five millions a day to the East London last year, were you not?—Through the months of September and October we were giving them that quantity.

25,317. I think it is from your system that the instance was given us of 16,000 bacteria in a cubic centimetre?—Yes, that is so.

25,318. Can you give us when that was? I forgot the date, but I think we have got it?—It occurred on the 8th December 1896. Directly it was discovered Sir Edward Frankland wrote, and the filter, which had just then been put to work, was stopped, the sand was opened up and a very careful examination made throughout. Nothing was discovered to explain it; the filter was again put to work, and since that no complaint has been received.

25,319. But that is a little alarming that 16,000 bacteria can creep in in that sort of way, and no explanation of the fact?—Yes, it is. We have used every possible endeavour to trace it. I am bound to say that the only thing that has ever occurred to me is whether the assistant, in taking the samples, might not have confused them. That filter was worked in quite the same way as all the others, and on that occasion nothing was found to explain the occurrence, and after it went to work again the results were the same as those which had always been obtained before. Of course if the samples had been taken from the river or the top water, that probably would have explained all; but why such a terrible difference should have occurred on that occasion, and never before, and never since, it is quite beyond my power to explain.

25,320. Have you the means of getting the water separately from each of your filters?—Yes. Of course we are most anxious to find out really any details of the separate working of each filter, and therefore we have provided in all the existing filters, and in the new filters, a special arrangement that can be only used for taking the samples, so that the analyses of the working of every filter might be accurately known.

25,321. As I understood, either Professor Crookes or Professor Dewar, I forgot which it was, stated that they took their samples from some clear water well, I believe the well which contains the produce of many filters?—They can do that. Some of the samples now are taken in that way, and some are taken from a draw-off tap on the delivery main, but it was suggested some time ago that it would be desirable to have a special means of access to each individual filter, and we have made provision for that.

25,322. But those gentlemen, the chemists, take their samples now from the separate filters, do they not?—Sir Edward Frankland takes his from the main, and the others, Professors Dewar and Crookes, take theirs from separate filters.

25,323. (Major-General Scott.) Does not Sir Edward Frankland take his from the issuing water at the bottom of the filter?—I am not quite certain, I confess, whether Sir Edward Frankland takes his from the main, or whether he takes it from the filter.

25,324. I think that you will find that Sir Edward Frankland does take care to take the sample as nearly as practicable at the point where it issues from the material which is used as a filtering medium?—Yes, you are quite right. It is Professors Crookes and Dewar who take it from the delivery main, and Sir Edward Frankland takes it from the filter. To facilitate that, we have made special arrangements in the new filters for obtaining these samples.

25,325. (Sir John Dorington.) And the result of that examination is known the following day is it not—not the same day?—Not the same day.

25,326. But the next day?—Not always the next day, but within a day or two. We have telephone communication between the company's chemists and our principal office, and we get it instantly, directly the result is known; it is not kept waiting for the post.

25,327. They cannot know till the next day, can they?—No, they cannot.

25,328. (Major-General Scott.) Do you consider that it would be a good addition to your filters to have a means of gauging the velocity of filtration, and ascertaining it by means of an indicator?—I do. I think it is a most desirable thing. To show how sincere I am in that belief at the present time, we have made an apparatus which is fitted to our No. 2 filter at Hampton, and is in process of being tried now with a view of its being attached to every filter we have, and provision is made in the new filters for its insertion.

25,329. So that whoever is controlling the filtration would be able to see on some dial or other apparatus the rate at which filtration is going on?—Yes, and more than that. I think that in addition to the person in charge being able to see at a glance the rate per square foot at which water is being filtered, it should be recorded on a diagram, which diagram should be sent to the office every day, and a check would thus be maintained on the man in charge.

25,330. That would be still more perfect, then?—Yes. We have made provision for that. The apparatus is made, and if not at present actually at work it will be at work within a very few days.

25,331. (Chairman.) And it would be desirable, I suppose, that it should be compulsory on all the companies?—As far as my experience is concerned, we have not got it at work yet, but if it turns out as I hope it will, I think it would be desirable that it should, and the companies would inevitably gain by it, as it would constitute a complete answer afterwards in the event of any complaints being brought by an outside authority as to the excessive rate of filtration, or anything of that sort, those diagrams would then contain their refutation.

25,332. Professor Dewar told us the rate of filtration was really the governing factor in the purity of the result?—There is no doubt in a clean filter that is so.

25,333. I do not know whether you have anything to say to us on Sir Alexander Binnie's scheme for separating the supply of the County of Surrey from that of the County of London as regards the Southwark and Vauxhall district?—One important feature of the scheme was based on the existence of a main which really does not exist. Sir Alexander has assumed that there is a 12-inch main between Hampton and Richmond. That is not the case, there is no such main; the only two mains between those two points are a 30-inch main and a 36-inch main.

25,334. What does the 30-inch main do now?—The 30-inch main carries filtered water from Hampton to Nunhead.

25,335. That is for the supply of the district of the County of London?—It is for the supply of the County of London, and also has a branch to supply the Wandsworth engines.

25,336. What does the other main do?—The 36-inch main is an unfiltered main carrying unfiltered water between Hampton and Battersea, and at Battersea the water is filtered and re-pumped to the district.

25,337. Do I understand you that neither of those mains could be used for the purpose of giving a separate supply to the county of Surrey?—No, I do not think they could without a very considerable loss of capital. The supply afforded in Surrey does not exceed two millions, and the carrying capacity of that main is over ten millions.

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25,338. What are the requirements of the county of Surrey, so far as you supply them?—They do not exceed two million gallons a day.

25,339. All the rest of the carrying capacity of that main would be wasted if that was devoted to Surrey?—It would.

25,340. On the other hand, the carrying power of that main up to Nunhead would be lost?—Yes, four-fifths of it would.

25,341. That would only mean, I suppose, that you would have to duplicate that main?—Yes, that would be the next extension that would be required.

25,342. Could you separate your inlet works between Surrey and Middlesex?—I do not believe it would be possible to do it. I believe shortly if that were desired it would be cheaper to re-construct the works than to try and alter them. The present arrangement is so intricate as regards arrangements between reservoirs and works, and engines and boilers that any attempt to alter it would cost more than re-construction.

25,343. I suppose you could disconnect the distributing plant, the pipe plant—you could separate that between Surrey and London?—Yes, I believe that would be quite practicable, but any attempt to extend that to works I do not believe would be practically possible.

25,344. By works do you mean the pumping works at the inlet, or what do you mean by works?—The inlet, the connexions to the reservoirs, and from the reservoirs to the filters, and from the filters to the engines, and then the delivery from the engines to the mains. I should start at that point. I believe from that point it might be possible; but as between the river and the outlet from the works I do not believe it is possible.

25,345. (Major-General Scott.) As a matter of economy, do you advocate it, or do you consider it practicable—do you consider it would be economical to split up the pipe system?—To split up the pipe system as regards the separation of districts?

25,346. Yes?—No; I do not see how it can lead to economy.

25,347. You would say it can be done as an engineering matter, but it would not be conducive to economy?—I cannot see how it can possibly be conducive to economy.

25,348. Allow me to put it stronger—it would cause additional expense?—It must create additional expense in my opinion.

25,349. (Chairman.) I believe, in your view, your company have already realised the advantages that were enumerated by the Duke of Richmond's Commission as advantages—transferring the supply to public authorities?—Yes, I think so; I believe every one of the recommendations of the Duke of Richmond's Commission that were thought to be inseparable from the transfer of the companies to a municipal authority have been realised by the companies acting on their own initiative.

25,350. Will you shortly mention them?—First, the constant supply, although, as I have stated in my proof, the companies have never had the powers as regards the control of fittings that the Duke of Richmond's Commission thought were necessary, the whole of my company's district within the area of the London County Council has been transferred to the constant supply, and, as a matter of fact, 85 per cent. of London. Of course, the consequence of not having those regulations has been that the supply per head is higher than it otherwise would have been; but, notwithstanding that, the supply has been given.

25,351. By 85 per cent. of London, do you mean the county of London?—Yes.

25,352. 85 per cent. of your supplies in the county of London are constant supplies?—The whole of our supply within the county of London is under constant supply.

25,353. Then what is the 85 per cent.?—It is 85 per cent. of the Southwark Company's district. There is a certain proportion outside the county of London, and that proportion has not as yet been transferred, but the whole of the supplies inside the county of London have been transferred.

25,354. What do you mean by transferred?—From the intermittent to the constant system.

(Chairman.) Then it is only 85 per cent. of your whole district that is now under constant supply—because I have had given me a different figure; I have got 93 per cent.

(Mr. Claude Baggallay.) I think that 85 per cent, my Lord, refers to the whole of London, not merely to this company's area.

(Witness.) Yes, it is 93 per cent. for our district.

25,355. That 85 per cent. means the whole of the district within the county of London, and that 93 per cent. means the whole of your company's district?—Yes, that is so; and Mr. Baggallay is absolutely right.

25,356. (Chairman.) You say that your Parliamentary powers of preventing waste increased the supply per head of your company?—Yes, that is so. We are limited to the regulations made under the Act of 1871. They were no doubt thought to be sufficient at the time, or as near a compromise as could be obtained at the time for efficient ones; but they fall very far short of those in use by the great towns in the North. The result of that is that we are bound to pass fittings now that technically comply with the Act, but do not fulfil the spirit of the regulations at all, and, as a consequence, the supply per head is necessarily higher than it otherwise would be.

25,357. (Major-General Scott.) You have the power of applying to the Local Government Board, have you not, to amend the regulations?—Yes, we have, and that has been a subject which the Associated Chairmen have considered on more than one occasion. As a matter of fact, a committee of the engineers was appointed, of which I was one, to draw up an amended series of regulations for submission to the Local Government Board. That has been done, but owing to the pressure of this Commission and other matters, I presume it has not been thought a fitting time to ask for that alteration.

25,358. Still, the machinery is there for amending that defect?—Yes, the machinery exists, and in my opinion, nothing is more urgent than the amendment of the present state of things.

25,359. (Chairman.) Why have you not made application to the Local Government Board before this then?—Of course, the companies have been so cumbered with other things up to the present, that I suppose that is the real explanation; but the regulations have been drafted for submission, and I believe it is intended to be done at the first possible moment.

25,360. What other things have hampered you—I should have thought this was the first thing to attend to?—Of course, there is this Commission, and there are the transfer Bills, and almost every session there has been something in Parliament from the London County Council to oppose.

(Mr. Claude Baggallay.) I think the principal reason, though, for the delay has been that they were waiting for the result of this Commission's Report before proceeding.

25,361. (Chairman.) Is there beside this employment in Bills and Commissions a feeling that your regulations would, perhaps, frighten the public?—I do not think they would frighten the public—no doubt we should have a great deal of opposition, but they would all be capable of explanation. Directly the facts were put forward I think it would not frighten the public, but to a certain extent would reassure them, because one difficulty now is this, to take my own company's district as a sample:—A great deal of the property the owners do not reside in; it is let to small tenants, and the collection and the management is in the hands of agents. These agents have, of course, their own interests to serve. They know exactly how near to those regulations they can sail. They put in fittings which they know will satisfy the magistrate, but are very far from being satisfactory fittings, and would not be passed had we proper powers. The consequence of that is, there is no doubt, that they can charge for repairs and those alterations and within a very few weeks that fitting is defective, and it has to be either repaired or removed. That, of course, bears very heavily on small owners of property who are probably resident at a distance; but we are powerless in the matter. Only recently, as an instance, I may mention there was a waste preventing cistern fitted—in fact, a large number of them were, but we took a test case—a waste-preventing cistern was fitted to the flushing arrangement for the w.c., which could be held, and could continue to discharge continuously. The wording

of the regulation is that a flushing cistern shall be provided and so fixed that it shall not deliver more than two gallons at each flush. We took that case before a magistrate, and the magistrate went carefully into the question. He said: "but supposing this fitting is properly used, that is, supposing it is pulled and then let go when the two gallons have been discharged, then it is a proper fitting?" Of course, we had to admit that it was. Then the magistrate said: "That is a fitting in compliance with the regulations, because it means that as long as it is properly used it should only be capable of discharging two gallons at each flush." We could do nothing further in it, and those fittings exist at the present day by thousands.

25,362. You mean if the discharge is continued by the operator it discharges more than two gallons?—It discharges continuously, and in addition to that we found in some cases nails fitted in the walls where the cords were hung so that they were left running continuously; but still if it had been properly used it would only discharge two gallons.

25,363. (*Major-General Scott.*) Do you find that the local authorities are alive to the necessity of preventing waste, and do they give you any assistance in the matter?—Some of the parishes do, and their sanitary inspectors give us notice where waste is taking place; but those instances are few and far between.

25,364. I observe that under section 10 of the Metropolitan Water Act, 1871, the Metropolitan authority has the power to call upon any owner or occupier of premises, and to require him in cases, where the fittings are of an unsatisfactory nature, to replace them?—I have never known that done.

25,365. That has never been done?—Not to my knowledge, it certainly has not.

(*Chairman.*) The Metropolitan authority being what—the London County Council.

(*Major-General Scott.*) In London, the London County Council, and outside London the county councils.

25,366. (*Chairman.*) Those enactments are all very fine, but what machinery has the London County Council got for finding out what particular occupier has got a nail in the wall to which he fastens the cord?—I do not think the County Council would do that, but the local sanitary inspector has power to visit, but there never has been any general desire on their part to limit waste.

25,367. (*Mr. Lewis.*) Do you not stamp your fittings in some way?—No; if we had such power as that it would get over nine-tenths of the trouble we are faced with.

25,368. Are all the companies in the same position?—Yes, all the metropolitan companies.

25,369. I thought it was the practice of at least one of the metropolitan companies to stamp all their fittings?—Yes, it is their practice, but it has to be done by persuasion. You cannot say unless those fittings are properly stamped and of regulation pattern they cannot be fixed. The most that you can do is to say to the various makers: If you will send them to us we will test them, stamp them, either free, or at a nominal cost, and then they will be passed as a matter of course by our own inspectors. But it is purely at their own instance whether they do so or not.

25,370. (*Chairman.*) What proportion of your district is small class property, where the owners do not reside?—81 per cent. is under 30l. per annum.

25,371. Is there any other recommendation of the Duke of Richmond's Commission which you think has been effected by the companies?—In the matter of quality. That Commission was before the Act of 1871, and before the appointment of the Government Water Examiner and the Government Chemist. They have been appointed by the Government, and the result has been set forth in Lord Balfour's Report. I do not know whether you would wish me to read that.

25,372. No, we have got that Act present to our mind. You say an improvement in quality has been effected since the Duke of Richmond's Commission?—Yes, I think the report of Lord Balfour's Commission disposes of that; and, in addition, the companies have provided themselves two chemists to see to it.

25,373. You mean Professors Crookes and Dewar?—Yes.

25,374. Then, there is the Thames Conservancy Act?—Yes, the Thames Conservancy Act, 1894, entailing on the companies a considerable monetary payment to the Conservancy, for the main object of improving the quality of the raw river water.

25,375. Then, I believe, one of the Duke of Richmond's recommendations related to hydrant supply?—Yes; it was argued before the Duke of Richmond's Commission that one of the first necessities for the proper supply of water for the extinction of fires was a constant supply at high pressure. That has been given throughout the whole of the Company's district, and, as a matter of fact, now we have very few hydrants the pressure of which is less than 50 lbs. on the square inch; and we have some with as much as 100 lbs. per square inch available always.

25,376. Have you separate reservoirs to give that pressure?—We have separate reservoirs in a sense—that is, we have a high and a low pressure system of mains and separate engines pumping into each. These mains terminate in reservoirs at three different levels—150 feet, 200 feet, and 340 feet above ordnance datum, so that the actual pressure on these mains—of course, dependent on the district—as I say, represents an effective head at the point where the hydrant is fixed of from 50 to 100 lbs.

25,377. Are the hydrants connected with this high pressure supply?—Yes, in every case; and more than that, when a hydrant is originally connected to a low pressure supply we at once, directly we have a high pressure main coming within measurable distance of it, write to the London County Council to tell them that they can have a higher pressure if they consider it necessary, and we transfer the hydrant to the high pressure at their order.

25,378. (*Major-General Scott.*) Do you consider that the systematic and continuous investigation of the pressures throughout the district by the local authorities in some form or other would be a good check on the character of the supply as regards quantity delivered?—No, I do not think it would help.

25,379. You do not think so?—No, I really do not. It would be an entirely misleading thing. For instance, you might have in a district where you have a large number of low cisterns supplied by low services a relatively low pressure; but unless you knew the actual service of that district and the actual pressure required for that service, the low reading of the water gauge would tell you nothing beyond the fact that the pressure was lower than in a corresponding street in which the houses might be, perhaps, at twice the elevation.

25,380. If you found the pressure in the main of a street supplying the houses in that street was at any time below that pressure which would be necessary to carry the water to the higher cisterns of those houses, surely that would be a sufficient indication without going into the houses, that they did not receive at that particular time a supply of water?—It might or might not, because in a great many streets, in fact, in all the cases of streets where we have a very great range in the level of supplies, that is where there are buildings at a low level and model-dwellings with cisterns at the top—we have two systems of pipes, the high and the low pressure system; so you would have to have readings from both to obtain the information you suggest.

25,381. That may be, but still as a matter of fact, if you ascertained in reference to a particular house or a particular number of houses, that the necessary pressure in the main from which they were supplied was a certain amount, and you at any time ascertained that the pressure in that main was less than that amount, it would be a sufficient indication that those houses at that time could not be receiving a supply of water, would it not?—It would be unanswerable, of course, but you would have to have a continuous record through the whole of the 24 hours in the case of each main.

25,382. Still, in the case of constant supply, it is supposed that the pressure is continuously sufficient to give that supply?—Yes, the pressure, of course, is sufficient to supply the highest cisterns in the highest houses, but the pressure varies hourly throughout the district, due to its level above ordnance.

25,383. (*Chairman.*) If the pressure varies the supply cannot well be constant?—Yes, it is constant, because the pressure never falls below, or at least rarely falls

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25,384. (*Major-General Scott.*) That is exactly the point to which I am alluding. Assuming that you find in a street that the pressure of a particular main was less than that which experience showed was necessary in order to convey the supply to particular houses, of course that would be quite sufficient evidence that the supply could not be going on at that time?—That would be so. But there would be several things more than that that would, I think, want to be taken into account, because in the case of long services, the pressure in the daytime to reach the cistern is very much higher than it would be at night when the demand is less, and when, of course, the statical head is practically effective. Supposing there is a street of some half-a-mile in length, the day pressure at the inlet end, at the point where the supply is taken off from the trunk main, would probably require to be nearly twice as high as it would be at night to give the same supply to the high cisterns.

25,385. I cannot understand you; the pressure necessary to elevate water a certain height above the ground cannot vary?—Not the statical head.

25,386. Supposing you take the minimum pressure; the minimum pressure necessary to raise water a certain height must always remain the same?—That would depend on the draught on the main.

25,387. Because that would reduce the pressure?—Yes.

25,388. (*Chairman.*) I suppose you mean that at night no supply is wanted, and, therefore, the supply is not constant through the night?—No, the pressure then is higher than ever. But what I meant was this—in the day time you might have for a cistern, say 50 feet in height, a pressure in the main of 70 or 80 feet at the inlet, so as to overcome the draught from the other supplies which were being afforded; but at night a pressure of 50 feet would give the supply to a 50-foot cistern, because the flow in the main has practically ceased, and you have got in effect the statical head available.

25,389. (*Mr. Claude Baggallay.*) All the intervening people are tapping the main as the water passes in the day time?—Yes, that is so.

25,390. (*Chairman.*) Do you defend the exemption of the companies from failure of supply on account of frost and draught, and unavoidable causes or accident?—Yes. My defence is limited to the fact that I think the same causes would bring about the like results, whether the supply were afforded by the companies or by a municipality.

25,391. It does seem reasonable enough that the companies should not be liable to penalties when some unavoidable accident has prevented them from giving a supply; but it does seem to require a little justification why they should go on exacting the charges, although they give no water?—It is hardly correct to say they give no water, because during times of frost the actual quantity of water supplied exceeds even that given in times of drought. The cost of pumping is always excessive in times of frost, although the consumers cannot receive the water into their houses. It is not as though the company saved anything in consequence of the frost. The very contrary is the fact. As a matter of fact, with the Southwark Company during the frost of 1895, the extra charges on revenue for that half-year exceeded 30,000*l*.

25,392. Do you mean that a great many of the pipes burst, and, therefore, there was a consequent loss?—Yes, and not only that, but, of course, the pumping and every other charge was infinitely higher.

25,393. Why?—The quantity pumped to waste was enormous, and the leakage was enormous; to try and meet that as far as possible, the full capability of the plant was used.

25,394. In a year of drought like the last year we have heard of whole districts being short of water for a considerable time, and yet having to pay for the water a fixed charge and a high-service charge, all of which they did not get; that seems to require some defence?—Of course, that was really a failure of source of supply. It is a matter that the East London probably could answer infinitely better than I could; but, as I understand the contention, it is that they could not have foreseen the failure of the source.

25,395. Granted, and, therefore, they ought not to be liable to penalties; that seems reasonable enough; but that they should be able to exact charges for what they do not supply seems a little stiff?—Of course, it was not as though they had stopped entirely, or had done nothing to meet the difficulty.

25,396. They had stopped the high service entirely?—Yes, but all that time they were giving a supply per head equal to that given by many of the towns in the North of England.

25,397. So be it, but they were making a special charge for high service which they did not give?—Yes; of course, I understand that.

(*Mr. De Bock Porter.*) The consumer did not get what he really paid for.

(*Chairman.*) There may be some justification for it, but it seems a little arbitrary and a little harsh.

(*Mr. Pember.*) He does not pay for it; he pays for a supply generally with that particular condition attached to the liability to give it.

25,398. (*Chairman.*) No, there is a special charge made upon him for high service. During last year that high service was not given, but, nevertheless, a charge for it was exacted, the company saying we are put to great expenses in consequence of this drought, and we really cannot diminish our charges. (*To the witness.*) It sounds a little odd, does it not?—As I understand their argument, they could not have foreseen it, and all their costs and charges go on, and, in fact, are increased, in consequence of this drought.

25,399. (*Mr. H. W. Cripps.*) How long was it during the year that you were not able to give the high service?—In 1895, the frost year?

25,400. During last year?—We never failed last year, we gave a supply throughout.

25,401. Then you have not failed, I suppose by that, since 1895?—No.

25,402. This question has never arisen of late years as to whether you make a charge for it, or not?—Not in this company's district.

(*Chairman.*) I receive letters every day from gentlemen who hand me correspondence with the East London Company, in which they ask to be relieved from payment for the high-service charge, which was not given, and the company refused to grant the exemption.

(*Mr. Pember.*) Of course, you will remember what Mr. Bryan said on that subject of high service?

(*Mr. H. W. Cripps.*) Of course, Mr. Restler is not responsible for that.

(*Chairman.*) I do not say Mr. Restler is in the least responsible.

(*Mr. Pember.*) You remember what Mr. Bryan said about high service?

(*Chairman.*) Perfectly.

(*Mr. Pember.*) I mean whose fault it was that they did not get it—the people let the water run to waste.

(*Chairman.*) Yes.

(*Witness.*) It is true, also, in the case of the Southwark Company. A great deal of the difficulty we had after the frost arose from persons who, directly their pipes were connected, left their taps running, so that they deprived the adjoining tenants of a supply.

25,403. (*Chairman.*) Do you find the alteration of existing streets and roads interferes with your pipes a good deal?—It very often does. In addition to that, at present we are unable to get recouped the cost to which the company is put. The London County Council's model clause exempts them from any liability, should the pipe originally be laid at a depth of less than 2 feet; for instance, if they are altering the level of the street, and the depth of the pipe is only 1 foot 11 inches below the surface, they could reduce that to any level they like, but we should have no claim against them unless the pipe was over 2 feet in depth originally.

25,404. I suppose the defence of that clause would be that unless a pipe is over 2 feet in depth, it is not protected against frost; and, therefore, whether you protect it by a few inches more or less is immaterial—it would freeze if nothing were done?—That is no doubt the argument, but it certainly does not improve matters; it makes it infinitely worse, because they may reduce it from 1 foot 11 inches to 6 inches,

or even to less than that, and we should have no remedy. As a matter of fact, it is purely a matter of opinion whether 1 foot 11 inches is an insufficient depth. We had plenty of pipes that were less than that which were not frozen.

25,405. Have you anything to say about stop-cock boxes?—That is the same question; the surface stop-cock boxes in the streets which are suitable for use in the pavement, but unsuitable for use in the road if the road is widened, have to be taken up and removed at the cost of ourselves or the consumer, and we get nothing for that from the London County Council.

25,406. (*Sir John Dorington.*) If the works were transferred to the London County Council, they would have to do that themselves?—Clearly.

25,407. You would get it all into one hand then?—Yes, that would be so.

25,408. (*Chairman.*) Sir Alexander Binnie spoke disparagingly of your Streatham well. Have you anything to say about that?—The supply at the present time exceeds two and a half million gallons a day, so that there can be no question that it is a very important auxiliary source of supply.

25,409. Are you sinking other wells?—We are sinking two other wells at the present time, one at Merton and one at Honor Oak.

25,410. What stratum are you sinking these wells in?—Into the chalk. We have not reached the chalk in either case in the actual well, although we have in the borings; but they will come to the chalk, we shall then drive headings in the chalk to obtain a supply.

25,411. How near to the Thames is it?—I should think within five miles.

25,412. (*Mr. De Bock Porter.*) What depth have you got to?—At Merton we are down about 184 feet, and the chalk begins at a depth of about 220; and at Honor Oak we are down to 25 feet, out of a total depth of 140.

25,413. Do you reach the chalk at 140 feet there?—Yes.

25,414. (*Sir John Dorington.*) If you stop pumping, how long is it before the 55 feet is recovered again?—At Streatham we have never been able to depress the water more than about 52 or 53 feet, and it rises to within 4 or 5 feet of its original level, after about a couple of hours stopping—almost instantly in fact. At the lower levels directly the pumps stop you see the water rise.

25,415. Are there any other wells in the neighbourhood which are depressed by your pumping?—We have had no complaint of that for many years. Originally there were a few supplies that were given to large private houses in the neighbourhood, and they were affected after we started pumping—at least they stated so. But they have had a supply laid on from the Lambeth Company, and we have heard nothing since.

25,416. (*Chairman.*) Do you look to the wells as being a material help to your supplies in future?—Yes, I think everything points to their value in the future.

25,417. Has Sir Alexander Binnie understated the capacity of your reservoir at Honor Oak?—Yes. I think that he has simply transposed the figures from 52 to 25.

25,418. The reservoir holds 52,000,000 gallons?—It will. It is under construction now. It is intended to hold 52,000,000 gallons, and Sir Alexander quoted 25.

25,419. When did he give that figure?—It is in the table of service reservoirs, which he handed in at question 1418.

25,420. Is that a finished reservoir?—No, it is not a finished reservoir.

25,421. Very well. With regard to the population of your district; you get at it, I suppose, by taking so many people per house?—Yes, we get at it by taking the population shown by the Census of 1891, and multiplying the actual number of supplies by that figure.

25,422. What was the figure shown by the Census of 1891, as the population per house?—It was taken by General Scott that 6·71 was the proper figure for my company's district, and we adopted that in the return of the company dated in January last year.

25,423. That is not the figure that Lord Balfour's Commission took, I think, is it?—Yes, it is the proportionate figure for the 18·2.

25,424. (*Major-General Scott.*) Some gentleman from the Registrar-General's Office went into the question, did he not, for the benefit of Lord Balfour's Commission?—Yes, Mr. Shoveller.

25,425. And he brought out a certain percentage for each parish, I think?—Yes.

25,426. It was a certain figure for the number of persons per supply in each parish, was it not?—The number of persons per house.

25,427. And that was applied to tables subsequently?—Yes, that was so. We know the actual number of supplies afforded, and by multiplying the number of supplies by the number of persons per house, as shown by that return, of course we get the population within the district.

25,428. (*Chairman.*) The way you got at it was by multiplying your number of supplies by 6·71, was it not?—Yes.

(*Chairman.*) Very good; that is intelligible. We know that Lord Balfour's Commission took the average decimal increase in Greater London, I think, at 18·2 per cent.

25,429. What was the proportion in your district?—Our proportion of that would be 13·51.

25,430. How do you get that?—That is shown in a table which I have here.

(*The witness handed in Table. See Appendix V, 10.*)

25,431. This table shows that in your district the population in 1881 was 658,654. That is by the Census, I suppose?—No, that is not the Census number; that is the number of supplies multiplied by 7·43, the number of persons per house of that time.

25,432. In 1891 you make the population 760,397. How do you get that?—That is the number of supplies multiplied by 6·71, the figure of the 1891 Census.

25,433. That gives an increase in the district of 15·44?—Yes, that is so.

25,434. You were below the average, were you?—Yes. If you look at the lowest line of figures, you will see that the average rate of increase was 20·79 for the whole of London.

25,435. Who found that, or who affirms that?—That arises out of the returns of the companies. The area supplied by the companies and the Registrar-General's return from the Census are not coincident. If you multiply the number of supplies by the persons per house, in some cases you get an overlapping area that is not covered by the Census. The average of the actual supplies is 20·79; but as Lord Balfour's Commission took 18·2 for the average, we have reduced our 15·44, which is the figure due to this company, by 12 per cent., which is equal to the difference between 20·79 and 18·2, so that our actual figure would become 13·51, as shown in column 5.

25,436. (*Mr. Lewis.*) How do you explain the discrepancy between that figure and the figure contained in your letter of the 4th February 1898 to the Secretary of the Commission, a copy of which was handed in at Question 25,094?—I have not the figures before me now, but I think that was taken on the basis of the 18·2.

25,437. No, 18·75?—That figure, I think, should be corrected now. It was taken at 18·75, which is the rate of increase, assuming the figure of 7·43 per house had remained. That was the same as was given in the 1881 Census, but is not the 6·71, as given by the 1891 Census.

25,438. (*Chairman.*) This is extremely unsatisfactory?—These figures have been gone through very carefully now, and I think you may take the table which I have just handed in, as accurately representing the figures.

25,439. (*Sir John Dorington.*) Have you any figures, the effect of which is to justify the 13·51 which is theoretical, by actual facts?—Yes, I have a table.

25,440. That is the intention of it?—Yes, that is so.

25,441. While you admit that the 13·51 is theory, you say that, in practice, it is in excess of the actual increase?—Yes, that is so.

25,442. (*Chairman.*) You had better hand in that table?—I will do so.

(*The witness handed in Table. See Appendix V, 11.*)

25,443. Is there not this difference: Lord Balfour's Commission estimated that the decennial increase of

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Mr. J. W. Restler. population was 18·2 over the whole of the water companies' districts; but you estimate the increase in the population supplied only—that is, in the population actually receiving supplies of water?—Yes.

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25,444. We know that the population actually receiving supplies of water is not the same thing as the whole population of the district, because there are large parts of your district that are not supplied with water by the company?—Not in our district. In our district practically everyone has a supply laid on by the company.

25,445. Do you mean that you supply every house in your district?—Yes. You see the population is got by multiplying the actual supplies.

25,446. I know that perfectly. You get the population actually supplied by multiplying the number of houses supplied by 6·71?—Yes, that is so.

25,447. But there are certain houses in your district that are not supplied by you?—Then they are supplied by some other company, either by us or by the Lambeth. I should think the instances that have no supply laid on by the Company you could almost count on your fingers.

25,448. (*Mr. Claude Baggallay.*) Either by the Lambeth or the Richmond Corporation?—Yes, but they are left out.

25,449. (*Chairman.*) What I mean is that Lord Balfour's Commission, in estimating the increase of 18·2, took the whole population of water London?—Yes.

25,450. Quite irrespective of whether they were supplied or not, or what company supplied them?—So I understand.

25,451. You take the number of persons actually supplied in your own district by yourself?—Yes.

25,452. And ascertain the increase of those?—Yes, that is so.

25,453. Therefore the figures necessarily will not fit. This Table 11 is extremely complicated; will you tell us what it shows?—It was simply drawn up to show that the actual increase is not regular. Although the first years have been at a lower rate than the average, the later years are growing up towards the higher figure. If you refer to column 6 you will find that in 1892 the number of supplies was 684 below the theoretical figure, supposing the increase had been equal throughout; in 1893 it was 674, in 1894 it had fallen to 616, in 1895 it was 62 below, but in 1896 it shows an increase, and that increase is going on until now. In 1897 it was 709 above the theoretical average rate of increase.

25,454. (*Major-General Scott.*) Do you think there is a wave of increase coming?—Yes. The object of the table is to show that it would not be safe to reckon on the average being maintained, or even on this figure for 1897 being maintained, because it shows that though the number of supplies had fallen at a certain rate, they are now gradually going up in an increasing ratio.

25,455. Do you base on that an argument that you adhere to your proportionate part of the 18·2?—Exactly. I think it would not be safe to take anything less than that, although the present rate shows a decennial rate of increase of 10·79. I do not think it would be wise to assume that it would be anything less than the 13·51 owing to this increasing ratio.

25,456. Then you think the estimate of Lord Balfour's Commission as regards population should be adhered to?—Quite so.

25,457. (*Chairman.*) According to the note to this Table 11, it would seem that you have not taken to yourself a sufficient proportion of the estimate of Lord Balfour's Commission?—Yes.

25,458. Look at the difference of supplies; according to the theoretical population of 1898, assuming that your increase was a decennial increase of 13·51, you would get a population of 831,754?—Yes, that is so.

25,459. And that, at 35 gallons per head, would require 29,111,390 gallons per day?—Yes, that is so.

25,460. Whereas the actual supply in 1898 was 32,743,058 gallons?—Yes; but that, of course, was at a greater rate than 35 gallons per head.

25,461. I do not know whether it was or not, I am sure; it either is that your calculation of population is wrong, or that your calculation of the gallons per head is wrong?—The actual supply per head, of course, is

right; in column No. 7 the 35 gallons per head is assumed by Lord Balfour's Commission.

25,462. On a given population; therefore it is a multiplication of a given population by 35 gallons per head?—Yes.

25,463. The actual quantity supplied was a larger quantity, either because the population was larger, or the supply per head was larger?—The supply per head was greater than 35 gallons.

25,463a. (*Sir John Dorington.*) Your actual population, you say, is 816,000?—Yes.

25,464. According to Lord Balfour's Commission, it ought to have been 831,000?—Yes; as my Lord was mentioning just now, the population was less than it should have been, according to the Balfour Commission.

25,465. But the consumption of water is a great deal more?—It is more; that is so.

25,466. (*Mr. De Bock Porter.*) Do you assume that the quantity supplied will be reduced in the future?—Yes, distinctly.

25,467. Do you hope to get back to the 35 gallons?—I hope to do so; and I do not think there is any doubt, if we had different regulations, that we should do so.

25,468. (*Mr. Lewis.*) You mean as to your fittings?—Yes.

25,469. (*Major-General Scott.*) You have never completely recovered the increase in the supply per head that occurred in 1895, have you?—No, not completely; but I do not think 1895 has much to do with that.

25,470. I do not say anything about that, but I mean, as a matter of fact, the supply rose in 1895, and, though it has gone down, it has never attained its former rate?—No. As you know, it is going down now pretty rapidly. The real reason of that is that we have now got the whole district on constant supply, and, of course, it takes some little time to get all the alterations and waste that have accumulated put right. It may be that it will be a year or two yet before that is done.

25,471. (*Chairman.*) It seems to me that your Table 11 is based upon a set of hypotheses that may be right or may be wrong; your theoretical population, as you call it, is based upon the supposition that your share of the decennial increase of 18·2 is only 13·51?—Yes.

25,472. That is a mere conjecture—that is a mere guess?—Hardly that. Table 10 would show that it is really got from the number of supplies. The only object of Table 11 is to show that, in all probability, although the actual increase between 1891 and 1898 only shows—

25,473. Do let me stop you a moment; you now refer me to Table 10. Table 10 shows that you ought to have for your figure an increase of 15·44?—And the sum of all those figures would then have been 20·79.

25,474. That is going to show that the figure of 18·2 is wrong; you say that the actual increase per cent. in your district was 15·44, and that the actual increase per cent. in other districts was such that the average was 20·79?—Yes, that is so.

25,475. That is, in effect, saying that Lord Balfour's Commission under-estimated the decennial increase when they said it was 18·2; but, nevertheless, although that estimate of 18·2 is, according to you, incorrect on the facts, you adopt your proportion of 18·2, instead of adopting your real proportion, which is 15·44?—Yes; only, of course, we cannot get the real census; the only thing we can do is to take the actual supplies.

(*Chairman.*) I know you cannot; I mean to say all your tables are based upon hypotheses, and not upon facts.

(*Mr. De Bock Porter.*) The 20·79 is the actual supplies.

(*Mr. Pember.*) Do you not see you have got two rates of increase there, and one is greater than the other. You have got not only the mere growth of population, but the fact that more of the existing population is supplied than used to be supplied. Therefore, as I ventured to point out last week, you have got two rates of increase combined, and, of course, they are greater than the mere rate of increase of population alone.

(*Chairman.*) I put that just now to Mr. Restler, that the population supplied is not the same thing as the whole population, and he says it is not so in our district—that it is the whole population supplied.

(*Witness.*) True.

(*Chairman.*) That cannot affect the 15·44 which you find to be the actual increase in your district.

25,476. (*Major-General Scott.*) I think it is a fair assumption, is it not, that the rate of increase of persons supplied would be rather more than the rate of increase in the population according to the census return—the rate of increase in persons supplied would be rather more rapid because there are some people who, probably in the earlier years, were not supplied, and they would come forward and get a supply as Mr. Pember mentioned?—Yes, no doubt that would be so.

25,477. You might anticipate that the rate of increase in the number of persons supplied would be rather in excess of the rate of increase of the actual population?—I should think it is very likely.

25,478. It seems to me you have rather gone on that assumption, and that you have reduced your figures in column 4, Table 10, rateably in order to bring the total to 18·2?—Yes.

25,479. (*Chairman.*) Now have you got any other tables you wish to hand in?—Yes, I have a table showing the population and quantity of water required in 1931, 1937, and 1941. We have run that out on the three different bases—on the estimated rate of increase of 18·2, on the company's proportion of that 18·2, and on the rate of increase shown between the years 1891 and 1898.

(*The witness handed in Table. See Appendix V, 12.*)

25,480. Where do you get the rate of increase between 1891 and 1898 from?—Table 11.

25,481. You say the rate of increase from 1891 to 1898 has only been 10·79 decennially?—Yes, at the rate of that.

25,482. (*Mr. Pember.*) That is very funny; if it has only been 10·79 decennially I do not see how on earth it can be 15 odd?—That is from 1891 to 1898.

25,483. (*Chairman.*) You say that the increase between 1881 and 1891 was, in fact, in your district 15·44 decennially, but between 1891 and 1898 it was only 10·79 decennially; is that what you say?—Yes, that is it, and that the first figure should be 13·51.

25,484. No, that is the theoretical proportion of the 18·2, but your actual figure for the increase between 1881 and 1891 in your district was 15·44 decennially?—Yes, that is so.

25,485. Whereas from 1891 to 1898 the increase has only been 10·79 decennially?—Yes, that is so. That is the average rate of increase, although, as you see by reference to Table 11., the later years show an increasing ratio.

25,486. (*Sir John Dorington.*) And that population is judged by giving the same number per house supplied for the past year that you found actually existed and represented the whole population of 1891?—That is so.

25,487. (*Chairman.*) You get in Table 12 the quantity you will require in 1941, the quantity ranging between 44 million gallons odd a day and 61 million gallons odd a day?—Yes, that is so. That is taking the supply per head at 35 gallons.

25,488. (*Major-General Scott.*) What figure do you advocate being taken of those three, have you any particular preference?—I think the average figure of 35 gallons is a very fair figure.

25,489. (*Chairman.*) Major-General Scott refers to the total?—I think that the middle one, no doubt, is a fair figure.

25,490. 50,150,870 gallons?—Yes. That is the average quantity to provide for the supply. There would have to be a percentage for maximum above that always maintained.

25,491. I forget whether we have got for your company an estimate of what money must be spent to provide for 50 million gallons a day; I do not know whether we had that put in last time. Tell me what is the quantity of your present supply?—We averaged for 1898, 32,743,058 gallons.

25,492. And you say that in 1941 you will only have come up to 50,150,870 gallons?—Yes, assuming that the supply can be held at 35 gallons per head.

25,493. Your estimate of the cost necessary to provide that supply is two millions?—Yes, that is the figure.

25,494. Does that estimate take into account the possibility of recurrence of years like 1898?—Yes, as regards supply.

25,495. As regards the necessary storage to meet another such year as last year?—Yes, I think that deals with all the points.

25,496. You contemplate, I suppose, entirely a supply from the Thames and wells?—Yes.

25,497. That does not include what would be necessary to provide storage on the Balfour Commission conditions for your present draft of 24½ millions from the Thames?—No, it does not.

25,498. (*Major-General Scott.*) Have you gone into the question of the actual amount of storage on the Thames that you would require at that date?—Yes. The storage that we provided for is covered by the present Bill up to the extent of 45 millions.

25,499. Taking it up to 1937 instead of 1941, in 1937 I see your estimated supply on the basis you prefer is about 48 millions?—Yes.

25,500. Mr. Hawksley, who was one of the companies' witnesses, estimated that the total supply from the Thames in 1937 would be about 311 million gallons?—Yes.

25,501. Perhaps it is not fair to ask you a question on that, perhaps you do not recollect it?—I have not heard how he sub-divided it.

(*Mr. Pember.*) He does not sub-divide it at all.

25,502. (*Major-General Scott.*) It would be fair to sub-divide it according to the ratio of present supplies, would it not, assuming that they had increased proportionately?—Yes, I should think it would.

25,503. Deducting from that your storage, roughly, it would be several thousand million gallons that would be necessary on the Thames, would it not?—The 1937 figure would be 47 million gallons.

25,504. 47,713,000, which is very nearly 48 millions?—Yes. Excluding the 130 millions, as his Lordship mentioned just now, we should have enough storage for 47 millions under the Act of last year, that is with the 1076 millions additional that we are authorised to make.

25,505. You would have enough in 1937?—Yes, supposing there was no storage required for the existing 24½, in addition to that a large proportion of that 47½—probably 10 millions—would be from wells.

25,506. That is your assumption?—Yes, that is the scheme.

25,507. (*Chairman.*) You get from the Staines Reservoir scheme, how much?—Nothing; we are making reservoirs for ourselves, and the amount authorised under the Bill of last year is 1076 millions.

25,508. I do not understand your answer to General Scott?—We were in Parliament last year for an increased supply of 20½ million gallons, and the condition precedent to taking that supply is that we should guarantee a certain minimum flow over Penton Hook weir. The quantity of reservoirs necessary to guarantee that supply, having regard to the 45 millions, that is the present 24½, and the new 20½, is 1076.

25,509. (*Mr. Lewis.*) Are you applying for farther capital in this Session?—No.

25,509A. (*Major-General Scott.*) How much do you expect to get from wells; have you made any estimate of that?—We have assumed here that there would be 10 millions.

25,510. (*Chairman.*) I have not yet heard anything with regard to the allegation that you have got 40,481½ of dividend earning capital not authorised by Parliament. Is there any explanation going to be given to us on that subject?

(*Mr. Claude Baggallay.*) That was the 40,000£ which I gave you an account of, was it not, at the last meeting during the examination of Sir Henry Knight? If you remember I told you what was done under the Act of 1845, when the two companies, the Southwark and Vauxhall, were amalgamated, and how the capital

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See 25,141.

Mr. J. W. Reatler. was fixed for the purposes of the amalgamated company, and was subsequently reconsidered in 1852, when the Waterworks Clauses Act was applied to the company and the limitation of dividend was first applied.

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(*Chairman.*) I am ashamed to say that escaped my memory, and I confess I cannot follow the explanation there given. I dare say it is my fault. The charge, you know, was a very definite one, viz.: that the works in your Act of 1834 were valued at 266,000*l.* instead of 292,932*l.*, the difference being 26,000*l.*; and on the other hand that you raised by your Act of 1852 not 400,000*l.*, which you were authorised to do, but 423,600*l.*, giving you an excess over effective works of 23,549*l.*, and that amount was carried forward from year to year. I do not very well follow the figures, but that is an outline of what was alleged against you, and I do not see that your explanation covers that.

(*Mr. Claude Baggallay.*) I think, my Lord, the whole difficulty turns upon this: The Southwark Act of 1852 recites in the preamble as follows: "Whereas the authorised share capital of the company is 400,000*l.*, and the company have raised 303,600*l.*, part thereof, in 3036 shares of 100*l.* each, and the debt of the company secured at interest by mortgages on their undertaking is 120,000*l.*, and whereas the company have power to raise the residue of their authorised share capital, amounting to 96,400*l.* in so many shares, and whereas it is expedient that the company be empowered to raise for the purposes of this Act other sums by creating new shares and by borrowing," and so on, I think it is that which has led to the mistake which has been made in the previous evidence. If you add those figures together, the 303,600*l.*, which is recited in that Act to have been actually raised by shares, plus the 120,000*l.* which has been raised by borrowing, you will find that the total which had been raised at that time was 423,600*l.* That has been compared with the authorised share capital, which was only 400,000*l.*, which was authorised by the Act of 1845, when the two companies were amalgamated, and *prima facie* it would appear if one did not look to see what the borrowing powers were under the Act of 1845, as if the amount which was authorised to be raised had been exceeded by 23,000*l.* But when you come to look at the Act of 1845, I had it the other day, but it is set out in a table which was referred to then.

(*Chairman.*) What table, Mr. Baggallay?

(*Mr. Claude Baggallay.*) It was a table of Sir Henry Knight's, but which was not put in.

(*Chairman.*) Then Sir Henry Knight did give an explanation, did he?

(*Mr. Claude Baggallay.*) Yes.

(*Chairman.*) None of the figures fit.

(*Mr. Claude Baggallay.*) In the minutes of 1852, in answer to the Committee, the evidence was given that when the two companies were united in 1845 the subscribed capital, that is the share capital, was 400,000*l.*, but then in addition to that—Has anybody got the Act of 1845?

(*Mr. Pember.*) I have, but I can tell you that there are about a thousand sections in it.

(*Mr. Claude Baggallay.*) What was the authorised borrowing power under the Act?

(*Chairman.*) Really it is wandering off into side issues, to talk about the authorised borrowing power. The point alleged against you was that in your accounts you stated as capital an amount larger than Parliament had fixed. I do not think we will waste time in asking you to go through complicated Acts of Parliament at this moment, Mr. Baggallay. If you look at Question 3834 you will find the statement against you, which I confess is not quite intelligible to my mind; but there it is, such as it is, and if you will give us an explanation of it subsequently we shall be obliged.

(*Mr. Claude Baggallay.*) I will look it up and I will give you a detailed explanation of it.

25,511. (*Chairman to witness.*) Now, have you prepared a return as to your works and supply?—Yes.

(*The witness handed in a return.* See Appendix V, 13.)

25,512. (*Major-General Scott.*) Sir Alexander Binnie, at Question 23,280, put in an Estimate F; have you got that estimate here?—I know the estimate.

25,513. At the foot of it there is a table of authorised storage, and you will see that you are put down there

for a reservoir with a capacity of 1,076 million gallons?—Yes.

25,514. And the cost per million gallons in that is brought out at 483*l.*?—Yes.

25,515. Is that correct? I mean to say, do you endorse that?—No, it is not correct as regards the reservoir; it includes the culverts and the river intake and all the works incidental to that.

25,516. Sir Alexander Binnie, as you know, has an amount of 320*l.* for the Staines Reservoirs scheme per million gallons?—Yes.

25,517. That has been disputed as being far too great. Are you aware of that?—Yes.

25,518. Here your reservoirs are returned as costing 483*l.*?—I presume he has taken the amount of capital authorised in the Bill of last year, and divided it by the capacity of the proposed reservoirs, but, of course, that includes a great many other things besides the reservoir itself.

25,519. What would you bring it down to?—It may slightly exceed the Staines reservoirs, because they are smaller, but it will be very little in excess of that. The reservoirs that are proposed to be constructed are identical in character with those proposed for Staines, both as regards construction and in every respect except the capacity.

25,520. You are aware that the land taken for reservoirs by the Company's engineer, Mr. Middleton, I think—?—Yes.

25,521. Is 115*l.* per million gallons?—For the cost of construction.

25,522. Yes, at least, that is my recollection?—I do not remember that figure.

25,523. (*Sir George Bruce.*) That is the price at which the contracts are let, I understand, if General Scott is right in his figures?—I presume that that does not include land or culverts or any works.

25,524. (*Chairman.*) It includes the land for the reservoirs?—115*l.*

25,525. (*Sir George Bruce.*) Would it be a false impression if the land was included. I fancy that must be the bare cost of the contract for construction.

25,526. (*Major-General Scott.*) At any rate, what is your net figure?—In round figures, we have assumed 300*l.* per million.

25,527. (*Sir George Bruce.*) 1,076 millions is the capacity that you propose for your reservoirs, is it?—Yes.

25,528. Is that to provide against a year like 1898?—That is to provide really the storage, not on the 1898 basis but on the 1893 basis; it was the storage provided in last year's Bill, and was based upon 1893, for, of course, we had not the experience of 1898 when that Bill was before Parliament.

25,529. Do you think it would be wise and business like to go to the expense of millions to provide for an exceptional year which apparently only arises once in a century?—No, it seems to me to be a most improvident suggestion that we should do so.

25,530. Would you rather suggest that the wise and business-like way to look at it would be to let London, like other places, to some extent, be content for a time with a smaller supply of water than go to the expense of millions where the machinery would stand idle for 50 years perhaps?—I do not think it would be necessary that London should go short.

25,531. I mean 25 gallons instead of 35 gallons?—I would even go beyond that. I would say give London all it requires during that time, and put the machinery up necessary for it, but do not tie the companies to the guaranteed minimum quantity over Teddington, it would be quite possible then, at a very moderate cost, to give the whole supply required for consumption. The only possible objection that could be raised would be the temporary reduction in depth at periods of low water of the one or two reaches below Richmond.

Cross-examined by Mr. BALFOUR BROWNE.

25,532. Just one or two questions on your tables in order that I may understand. I have before me Table 12. I see there in each of the calculations you take 35 gallons per head per day. The calculation that you made in the year 1891 was upon very much

the same population; but instead of 35 gallons a head you calculated only 25 gallons a head?—Yes.

25,533. You have seen reason to alter that view?—It was Lord Balfour's Commission that altered that view.

25,534. Yes, but you differ from Lord Balfour's Commission, you see; with regard to the estimate of 18'2 you say it ought to be 13'51?—No.

(Chairman.) No, that is the company's proportion of the 18'2 in its own district.

(Mr. Balfour Browne.) True.

(Chairman.) The 18'2 is an average of the whole.

25,535. (Mr. Balfour Browne.) But, as a fact, one of your tables, Table 12, shows that 35 gallons per head has been exceeded in your own district?—Yes, that is so.

25,536. You cannot tell me what, in your Table 12, that 32,743,000 works out at per head, can you?—Yes.

25,537. What does it work out at. It is in column 8 you see?—41'33.

25,538. 41'33 the actual, as against 35 the theoretical?—Yes, but to get that correct that figure of 41'33 should be reduced by 10 per cent., because the number of persons per head dealt with at the time of the estimate of Lord Balfour's Commission was 7'43, whereas now it is 6'71.

25,539. Upon that table I see that, in 1896, you give upon your own calculation, in column 2, the population to be supplied as 810,704, the actual being 800,952. You see those two figures in columns 2 and 3?—Yes.

25,540. Do you know that, as a fact, there was a census in your district in 1896, and that instead of your actual being by the census 800,000, it worked out 812,964.

(Chairman.) The actual census taken by whom?

25,541. (Mr. Balfour Browne.) The actual census taken in London by the Government. I am bound to say that in London in your district the census gives 784,797; and then in Surrey, which I do not think there was any census for, but which has been calculated out, it is 28,167, making 812,964. If that is accurate, then your actual number would not represent the total number of people in the district?—Of course, if that were accurate, the supply per head would have to be proportionately reduced; but it is impossible that it can be accurate.

(Major-General Scott.) Are you alluding to the statutory area of the company?

(Mr. Balfour Browne.) No, the actual district of supply, and it is worked out in Surrey. I can put this table on the notes if it is any use to the Commission. I do not think it is on the notes at the present time.

(Chairman.) What do you mean by the census taken by the Government? That is new to me.

(Mr. Balfour Browne.) There was a census in 1896 taken by the Government in London.

(Chairman.) A census taken by the Government?

(Mr. Balfour Browne.) Yes, there was. It is a fact. It was under the Equalization of Rates Act, I believe, for that purpose, and it was taken in the year 1896.

(Major-General Scott.) It is necessary to see if Mr. Bestler has taken his calculations on the same area as you have.

(Mr. Balfour Browne.) That is what I understand; and it is not very far out, as I see, according to him, it is 800,000, and we say 812,000.

(Witness.) Yes; but, with all submission, I should even then rather set our figures against the Government figures, because the census would not deal with the separate supplies given by the Lambeth Company and ourselves in the joint area, and, therefore, if they were all totalled together, it would give a very misleading result.

25,542. (Mr. Balfour Browne.) But, as a fact, we have in that 784,797 absolutely taken out your separate supplies, and separated you from the Lambeth?—Yes, but even then, I fancy our figures would be more accurate, because we must know better the actual supplies afforded than even the London County Council.

25,543. (Chairman.) Yes, but the accuracy of your figures all depends upon whether the 6'71 is the right multiplier?—That is so.

25,544. Even a decimal or two would make a difference?—Yes. Mr. J. W. Bestler.

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25,545. (Mr. Balfour Browne.) With regard to the existing agreements that you spoke of as existing between you and the other companies—or rather understandings—is there anything in writing on your minutes obliging you not to compete in the district of the Lambeth Company, for instance?—No. There is one agreement, a very old document, in reference to supplying water in Wimbledon, but nothing in any other part.

25,546. It is a tacit understanding without being put in writing in any form, is it?—I have never seen any in writing.

25,547. In your district in recent times there has been a considerable amount, or, rather, in the districts of the two companies, there has been a considerable amount of building going on, and estates being laid out?—Yes.

25,548. In that case, suppose I were a builder, might not I have the water either from you or from the Lambeth Company?—Yes.

25,549. In that case I suppose I should be supplied, not at the Lambeth rate, but at the Southwark and Vauxhall rate?—Yes, I should imagine so.

25,550. I mean I would go to the Lambeth Company and say "If you do not supply me at the Southwark and Vauxhall rates, I will take the Southwark and Vauxhall water"—that is, if I were a builder of houses, for instance, on a certain estate?—Yes. I do not think the builder cares who supplies it so long as he gets it at the same rate.

25,551. Is it not a fact that in several cases you do find that these recent estates are supplied by the Lambeth Company at the very same rates that you would supply them at?—I have heard it is. I do not know of my own knowledge, but I believe they do charge the same rates.

25,552. Now, with regard to a question put to you about the 16,000 bacteria in the cubic centimetre upon a certain date. Do you say that is the only time that it occurred?—Yes.

25,553. Is it a fact that you only take samples of the water for bacteriological examination at all once or twice a month?—No, it is not a fact.

25,554. Are they taken daily?—Yes.

25,555. Are they submitted to bacteriological examination daily?—The analysts take them daily, and I presume they analyse them daily.

25,556. Who analyses for bacteria?—Professors Crookes and Dewar.

25,557. Are you sure?—Yes.

25,558. Are you sure that this 16,000 was from the two gentlemen who are chemists?—No, that was from Sir Edward Frankland, I believe. But I am perfectly certain about Professor Crookes and Professor Dewar, because, as I say, we are in telephonic communication with them, and every morning almost I get a note of results.

(Chairman.) My recollection is that Sir Edward Frankland said he took twice a month, whereas Professor Crookes and Professor Dewar took 10 samples a day.

(Mr. Balfour Browne.) I am not quite sure that Professor Dewar and Professor Crookes test for bacteria; I thought it was simply chemically.

(Chairman.) Yes.

(Witness.) Will you refer to the last Report of the Water Examiner for January 1898, which I have before me? This is the Report of Sir William Crookes and Professor Dewar:—"Our bacteriological examination of 251 samples have given results according to the following table."

25,559. Those are not published, are they?—Yes, indeed they are. These are official returns.

(Chairman.) The monthly returns.

25,560. (Mr. Balfour Browne.) Tell me, is it not a fact that, although only 16,000 were only got on one occasion, there are other occasions, in 1896 and 1897, when the numbers went up so high as 1,396?—I do not know that.

25,561. That is on the 7th March, 1897?—Yes, but I really do not know about that.

Mr. J. W. Restler. 25,562. Then 728 I see upon another day and 764. Do you know that the limit of safety is 100?—I do not think it is the limit of safety. That is hardly the term.

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(**Mr. Pember.**) When you eat butter there are so many thousands in your mouth I believe?

25,563. (**Mr. Balfour Browne.**) Forgive me, I was asking Mr. Restler a question. Do not you know that that is regarded as the limit of safety?—No, I do not think it is the limit of safety. It is only what they think desirable. I do not think they fix any standard.

(**Chairman.**) Would you tell me how you contrive to count 16,000 bacteria in a cubic centimetre?

25,564. (**Mr. Balfour Browne.**) I never did it and so I cannot say. It is from Sir Edward Frankland that I take it. Now a question about the measure of the rate of filtration. Are you aware that although you are only inaugurating it now, it has been done in a large number of works for a great number of years?—Yes, it has been done in a certain way.

25,565. Do you know that it is done by meter?—Yes, and I do not think the meter is at all the proper thing.

25,566. But you get a diagram?—Yes.

25,567. And you do get the amount of water passing through?—If it is a meter of that type, it is practically what we are trying now.

25,568. Do you know it has been done at Liverpool for the last 14 years?—No, I do not know that.

25,569. Now with regard to the question about this main; I asked Sir Henry Knight some question about it and he could not answer, and I have got only one or two to ask you. He said that the charge about leaking mains was entirely unfounded. Do you remember when the main from Hampton to London was laid?—The 42-inch main? That was laid from 1887 to 1891, I think.

25,570. Was the original construction of that main designed by you?—It was.

25,571. And was it carried out according to your designs?—Entirely.

25,572. What was the capital cost of it?—I think something like 160,000*l.*, but I am not quite certain.

25,573. How many joints were there on the mains?—That I cannot tell you.

25,574. Is it a fact (I have Mr. Stoneham's Report) that the work, as already explained, consisted of this remedying work?—Yes.

25,575. "Fixing a muff or collar over the joint, the two ends being run with lead and the centre filled with concrete. This treatment was applied to 3,092 non-leaking joints, and to 662 leaking joints?"—Yes.

25,576. Is that true?—Yes.

25,577. How much did that cost?—I cannot tell off hand I am sure; I should imagine we have spent on that main since, in very round figures, perhaps 35,000*l.*

25,578. 35,000*l.* in addition to the first capital cost?—Yes, in addition.

25,579. And it was a fact, in that case, there were 662 leaking joints on the main?—At the time of this report, yes.

25,580. And that you found it necessary to strengthen all the joints?—When we were doing it, of course to a certain extent we were interrupting the traffic and damaging the road, and we went right through with it whilst we were at it.

25,581. Was not it over 60,000*l.* that the extra cost was?—I cannot tell you. I do not think so, but it is not a fair suggestion, if you will forgive me saying so, to imply that any idea of economy had anything to do with the original laying of this main.

25,582. At any rate it was laid down at a certain cost?—It was.

25,583. And you found it necessary to spend a very much larger amount afterwards in making good defects that were discovered in consequence of the first laying not being satisfactory?—No, hardly in consequence of the first laying not being satisfactory. It was in consequence of the weight.

25,584. (**Chairman.**) In consequence of the weight?—The weight. It is laid through a district that is largely composed of running sand and fine ballast, and at certain times of the year the land water rises up almost to the surface of the ground, so that the sub-soil on which it rests is washed away, or becomes so loose that it is incapable of carrying the weight of the main. Therefore, subsidence takes place, and the joints leak. The work that we have done to remedy that has been to put a collar or muff round the joint, re-run that with lead, and make a Portland cement joint in the centre. That has so far proved perfectly safe and satisfactory. But this main happens to be the first large trunk main of this length that has ever been laid in the London district, so when it was designed in the first place we adopted as a model the type of joint that was used for mains of similar size in connexion with the Vyrnwy and the Thirlmere Scheme, and those joints, although perfectly satisfactory in the districts in which they were laid, which were largely on rock, have not been satisfactory in this particular district.

25,585. (**Mr. Balfour Browne.**) But you knew the kind of material you were laying this pipe in, of course, when you put it down first?—Yes, we did.

25,586. And you knew it was sand and water?—Yes, we did, and to a certain extent a possible difficulty of this sort was foreseen over certain points.

25,587. Then, why did not you expend the large sum of money at first in making the joints satisfactory, so that they would not leak?—Because it might have been possibly a very improvident expenditure.

25,588. Is it a fact that it was according to Mr. Stoneham's report that you calculated it at 17*l.* for each joint?—These are individual joints. I do not know whether Mr. Stoneham says that.

25,589. If you multiply that by the number of joints he mentions, it comes to 58,718*l.*?—Yes, but that is assuming that all those joints would want doing. Now, for instance, we have got miles of this main that have never been seen from the day it was laid. The trouble is localized to a certain point where we have all this shifting sub-soil, and as to other lengths the main is in the same state as the day on which it was laid, and has never given an hour's trouble.

25,590. I suppose, at the points where the joints leak there was very serious damage done to the road, was not there?—Yes, there was damage, of course. Every opening of the road diverts traffic and causes damage.

25,591. If it had been done originally when you were putting it down, of course, there would not have been this extra 17*l.* per joint, because that meant the taking up of the road?—Yes, there would, because this 17*l.* is the average cost, and from that has been deducted the work that has had to be done twice over—that is, the opening of the ground. All that is put to capital is the additional works, not the repair works at all.

25,592. But you have put the 17*l.* per joint, if that is the right figure to capital account?—If that is the right figure, we have put the additional works to capital.

25,593. (**Sir George Bruce.**) There is a great deal of water in the sand there, is not there?—That is so.

25,594. And does not that water sometimes pass through, and it becomes dry?—Yes, in some parts of the route of this main, through Merton, for instance, when the main was laid it was just like sugar. It was as dry as possible. But at other times of the year the whole of this sand is practically alive with water.

25,595. We know, I think, that all such foundations are extremely treacherous?—Yes.

25,596. Engineers are not omniscient, and cannot always foresee what may happen?—No. I have been reminded of this on several occasions, both before this Commission, and Parliamentary Committees, and by Mr. Stoneham. Of course, if I could have foreseen everything that was likely to happen, more precautions would have been taken at the time.

25,597. You would not have felt justified in going to very great expense in order to avoid what might possibly never happen. I suppose that regulated your action in the matter?—Of course, the desire was to spend only that which was actually required.

25,598. But to spend all that you thought would be reasonably required?—Certainly. Nothing was stinted.

The joints were run solid with lead. The pipes were carefully tested, and in fact every known precaution, as far as I was able to foresee, was taken, and I venture to say if we had originally carried out these very works that we have carried out now, before their necessity had been proved, I should have laid myself open to an assertion that we had done a very great deal of work that was utterly unnecessary.

25,599. Do you think your wisdom or unwisdom in this particular case depends at all upon the question before the Commission of whether purchase is desirable or undesirable?—I think it is the wildest suggestion.

(Mr. Pember.) I am glad to hear you say that because that is a question I have been puzzling myself over for a long time.

(Chairman.) I understand it depends upon the revision of capital and revenue accounts.

(Mr. Balfour Browne.) And also to a certain extent upon the management of the company.

(Mr. Pember.) But he says I have only charged that amount which I ought to have charged at first.

25,600. (Mr. Balfour Browne.) I should like the figures from Mr. Restler, because he said that he had deducted the opening of streets twice, but I do not know that?—That is so, the auditor has seen to that.

25,601. If you will show me the figures of how much it has cost, we will be able to judge?—The auditor has already done that.

Re-examined by MR. CLAUDE BAGGALLAY.

25,602. Just a question upon this last point. Has this question of the allocation of the expenditure which you have had to incur with regard to these mains been before the auditor?—Yes, it has been before the auditor for a considerable time.

25,603. You are speaking now of the Government auditor?—Yes, Mr. Stoneham.

25,604. Has it also been before the auditors of your company who are elected by the shareholders?—It has.

25,605. Has this matter been gone in carefully by Mr. Stoneham?—Yes.

25,606. Has he raised any question upon this question of allocation?—Yes. It was first of all passed by the Government auditor without question, after all the facts had been explained. Then Mr. Stoneham went into it very carefully. He would not sign the account, I believe, on the first occasion, but he submitted all the facts to counsel, and took their advice upon it, before he would sign it at all.

25,607. Then Mr. Stoneham had this matter under consideration for a long time?—Yes, he had.

25,608. When you say it was before Mr. Stoneham for some time, do you mean for some weeks, or what?—For 12 months or more.

25,609. For 12 months he was considering how this allocation should be made with regard to the repairs to these mains?—Yes. I may say, as far as I understand it, I do not think Mr. Stoneham had any difficulty as regards its being a charge to capital. But, in fact, his hands were to a certain extent tied by the clause in the Act of 1897. This clause had reference to the repairing of the main along the Hampton Court Road, and in that clause the words "restore and make good" were used by the council for Middlesex, who were the parties at whose instance the clause was inserted.

(Mr. Balfour Browne.) I think if you put Mr. Stoneham's letter to the Local Government Board upon the notes it will explain the matter very fully.

25,610. (Mr. Claude Baggallay.) I do not know the letter, so I will not put it on the notes myself till I have seen it; but you could have done that, if you had liked. (To the witness.) This matter was before Mr. Stoneham, as I understand, for about 12 months, and you say he took counsel's opinion, and has he approved the allocation as it stands now?—Yes, he has.

(After a short adjournment.)

Mr. EDMUND BOULNOIS, M.P., called and examined.

25,622. (Chairman.) You, I believe, are the chairman of the West Middlesex Waterworks Company?—Yes.

25,623. And chairman of the Staines Reservoirs Joint Committee?—Yes.

25,611. The constituted authority for controlling your allocation has approved the allocation which you have made?—Yes, he has.

25,612. Now, to pass from that, I just want to ask you one question upon some other matter, and that is with regard to competition. If you have competition in the streets between companies, does that very materially increase the inconvenience to the public by the breaking up of the roads, particularly when it is uncertain from whose main the damage to the street may be coming?—Yes, and that is a very serious objection now in the case where there is asphalt or wood paving.

25,613. Quite so, and therefore the relief to the companies from the obligation to compete is not only an advantage to the companies, but is an advantage to the public using the roads as well?—Yes, that is so. It is only a short time ago that there was a leakage in Stamford street, Blackfriars, and notice was given to us. We searched for a considerable distance and tore up, of course, a tremendous amount of this asphalt pavement, we found eventually the leak proceeded from the Lambeth mains, distant nearly 100 feet from the point we were searching at. The water had found its way under the wood paving, and travelled along 100 feet from the point of leakage.

25,614. Where you have got concrete under the asphalt or wood pavement you may have the mischief show itself a long way from the source of the mischief; it travels along underneath?—Yes, that is so, and with the extension of this more costly pavement the difficulty is daily increasing.

25,615. Now, with regard to the supply of water for fires, all the water is supplied gratuitously, is it not, including this extra pressure which you put on in order to provide the water necessary?—Yes.

25,616. Does that at the same time not only put upon the companies the expense of providing the water and the pressure, but also put upon them the loss due to increased leakage through fittings?—Yes. The quantity actually returned in connexion with fire extinction is a bagatelle compared to that actually supplied by the water companies for the purpose.

25,617. When the water is supplied under this pressure, of course, there is great loss through all the faulty fittings throughout the district where the pressure is on?—Yes, and in addition to that the Fire Brigade only return the actual quantity supposed to be pumped by the engines. Of course, if you only afforded the supply actually necessary, it would be a case of short supply. The whole time a fire is in progress the supply has to be largely in excess of the requirements, and has to be allowed to flow over the dams continuously.

25,618. Then with regard to your wells, you have a statutory power for sinking wells, have you not, on any of your lands?—Yes, under the Act of 1884.

25,619. Under section 9 of the Act of 1884 you have statutory authority to sink wells on any lands for the time being belonging to you?—Yes, that is so.

25,620. (Chairman.) Just one question about these microbes. You know the Reports of Sir Edward Frankland, I suppose?—Yes.

25,621. Did he in 1896, I think it was—at any rate it appears in the 26th Annual Report of the Local Government Board—say this:—"The standard of 100 microbes per cubic centimetre as an indication of efficient bacterial filtration adopted by Dr. Koch and myself is, of course, purely arbitrary, I consider it a sufficient, but not an unduly severe test to apply to the filtration of the river-derived supplies of the London water companies; but I desire it to be distinctly understood that the infraction of this standard does not throw suspicion upon the wholesomeness of the water, neither do I consider that the presence of *B. Coli communis* in water is a proof of sewage contamination, because this organism is one of the most ubiquitous and persistent of the harmless microbes."?—Yes, I had in my mind that there had been an observation of that sort when Mr. Balfour Browne was asking me, but I could not refer to it.

Mr. J. W. Restler.

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Mr. E. Boulnois M.P.

Mr. E.
Boulnois,
M.P.
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25,626. Now, your company have been in the fortunate position of having reached its maximum dividend of 10 per cent. as long ago as 1879, I believe?—Yes, that is so, due, I think, to the careful management in which I claim no part myself, because that was done before I joined the Board.

25,627. You have become chairman since 1896, I believe, only?—Yes, since 1896, having been deputy chairman before that.

25,628. But you have been a director since 1884?—Yes, since 1884.

25,629. Then you completed paying your back dividends in 1887, I believe?—Yes, in 1887.

25,630. Then you began giving rebates to the consumers?—Yes. We began with 5 per cent., then a few years afterwards it was 7½, and now it is 10 per cent.

25,631. After the report of Lord Balfour's Commission, did your company set to work to increase its storage?—We did so.

25,632. Under your Act of 1894 I believe you have constructed large subsidence reservoirs?—Very large subsidence reservoirs at Barn Elms.

25,633. And additional filter beds?—Yes.

25,634. You are one of the three companies that joined in the Staines Reservoirs Scheme, are you not?—Yes.

25,635. Have you a Bill this session in Parliament?—We have a Bill to make a 42-inch main from the pumping station at Hampton to our subsidence reservoirs at Barnes.

25,636. That main will take the Staines Reservoir water, will it?—Ultimately.

25,637. Will it take the water which you pump from the river at the present time?—It is for immediate use as well.

25,638. When that main has been laid, will you have works sufficient to provide for many years' supply?—We believe so.

25,639. You have joined in the Inter-communication Bill, which has been presented, I believe, this year?—Yes, we have joined in that.

25,640. Can you tell me what the capital is under that Inter-communication Bill? The Bill which you and the seven other Metropolitan companies are promoting?—It is not mentioned.

25,641. (Mr. Pember.) The amount mentioned in the Bill is 600,000l.?—Not exceeding 600,000l.

(Mr. Balfour Browne.) I think the amount is left to the Local Government Board in the same way, but not to be expended.

(Chairman.) Not to be expended necessarily, but not to exceed that.

(Mr. Pember.) No. It is not to exceed that; and the Local Government Board have got some control.

25,642. (Chairman.) What is the capital in your own Bill for that 42-inch main from Hampton to Barnes?—That is 250,000l.

25,643. You have had considerable experience in the management of these water companies, and do you see any advantage to the consumer in the purchase of the eight water companies by some public body?—There can be no advantage to the consumer in the district which my company supplies under existing circumstances.

25,644. You mean that you have reached your maximum dividend, and are likely to continue to earn it, so that any additional profit that you get must go in the relief of the consumer?—It must go to the consumer. At the present time the consumer receives considerably more than 20,000l. a year, and any further profit must go to the consumer. In fact, the consumer in the West Middlesex district is an ordinary shareholder of the company, the stockholders being debenture holders or preference shareholders. The consumer is interested in the company.

25,645. But might it not be alleged that you have no interest in looking after the advantage of that ordinary shareholder, the consumer—that it does not matter to you in the least whether he gets more or less relief?—It cannot be alleged against us in the past, because we have increased the rebate from 5 per cent. to 7½ per

cent., and ultimately to 10 per cent., all by careful management.

25,646. Yes; but I can conceive that this might be alleged—do not understand me as advancing any opinions of my own—I only want you to meet suggestions that may be made. I can understand that this might be alleged, that if the management had been in the hands of a representative of the consumer, he would have got 7 per cent. reduction instead of 5 and 12 instead of 10, and so on—that there would have been more rebate for him if the concern had been managed by somebody who was a representative of his interests, and not a representative of a body of shareholders?—I very much doubt that. The Board of Direction is an honourable board.

25,647. There is nothing dishonourable in that?—They treat the consumer fairly and well, indeed there is no reason why the expenses of management should increase.

(Mr. H. W. Cripps.) What I see, as the Chairman observes, is, that you being the head of a commercial company, have no further interest in the matter as a commercial company, excepting that you would wish to do what you could for those that you supply.

(Mr. Pember.) If they do not manage well, they will not get their own 10 per cent.

(Mr. Balfour Browne.) Let Mr. Boulnois answer.

25,648. (Chairman.) The moment you have got your 10 per cent. your interest ceases?—I say not, I say the experience of the past shows that it does not cease—that by careful management we, although giving our shareholders their 10 per cent., have managed to increase the rate of rebate which has gone to the consumer; and I unhesitatingly say that if we had been left alone during the past few years, a small additional rebate might have been given to the consumer.

25,649. Left alone by whom?—We have had to spend enormous sums of money in defending our interests in Parliament, and before Royal Commissions and in a variety of directions. I do not say that the sum which has been expended would amount to sufficient to give 2½ per cent. rebate, but it would be going towards rebate, and would amount to a considerable sum.

25,650. You mean that the consumers in your district have really paid all the expenses of ventilating the views, for instance, of the London County Council, in their several Bills?—Absolutely.

25,651. And the inquiries of Lord Balfour's Commission and this Commission?—Certainly.

25,652. They have been paid by the consumers?—Not only the consumers of my district, but the ratepayers also have been paying.

25,653. (Mr. Hollams.) They pay twice over?—They pay twice over.

25,654. (Chairman.) How the ratepayers? I do not quite follow that?—Because the ratepayers have to pay the expenses of the other side.

25,655. (Sir John Dorington.) Of the London County Council?—Yes, the London County Council, because it is the London County Council that have been—I do not use the word invidiously—attacking the water companies.

25,656. Your consumers have paid the expenses which have been incurred by the company, and the ratepayers in general have paid the expenses of the other side?—The ratepayer and consumer.

25,657. (Chairman.) The London County Council get their costs from the ratepayer, and you are obliged to get your costs from the consumer—that is how it works?—That is so.

(Mr. Pember.) It is like costs coming out of the estate.

25,658. (Chairman.) In your capacity of member of the County Council you must bear a little of the responsibility of that state of things, I suppose. However, you have not quite either admitted or denied the suggestion I was putting to you, which is that a management consisting of consumers' and ratepayers' representatives would have been more keen and active even than yourselves, much as you have done in getting rebates for the consumer—that whereas you have no direct interest beyond the ordinary very theoretical satisfaction of doing one's general duty, you have no direct interest in benefiting the consumer?—None beyond what your Lordship mentions.

(*Sir George Bruce.*) I suppose members of the London County Council are very much in the same position—they have nothing personally to gain in any way.

25,659. (*Chairman.*) No, nothing personally to gain, but they may be stimulated and driven by their electors—that is the theory—that their electors, being consumers of water, would keep them up to a mark of efficiency which the director of a water company does not attain?—In my case my constituents naturally keep me, as chairman of the water company, up to as high a state as the company will go.

25,660. Perhaps that is the explanation of these large rebates. But you see what I want you to deal with in your own way. Do you think that a management by representatives of the ratepayers and the consumers would effect more economies, and do better for the consumer than your Board of the West Middlesex Company has done?—Personally, I do not think that would be the case, because the expenses of management have not increased disproportionately since the maximum dividend was paid to our shareholders; and if there was any inclination on the part of the Board to belavish in expenditure, it would have become apparent by this time.

25,661. (*Sir John Dorington.*) You have had 10 years or 11 years, have you not?—I think it is more.

25,662. (*Mr. Balfour Browne.*) 1877 is the year?—Yes since 1877.

25,663. (*Mr. De Bock Porter.*) But your position is so assured as regards the shareholders, that you really are carrying on an undertaking in which you have no pecuniary interest?—I do not say that.

25,664. But your position is so absolutely safe as regards the shareholders?—I am not so sure with what goes on around one. There is the amount which we have to pay to the Chamberlain's Fund, which may eventually absorb the amount which goes to the consumer, and might ultimately touch the shareholder.

25,665. (*Chairman.*) You mean that your payments under the sinking fund clauses might ultimately trench even upon the 10 per cent.?—It might.

(*Mr. Pember.*) You see there is only one per cent. margin.

(*Chairman.*) Yes.

25,666. But there is a profit, is not there, out of that one per cent. margin which you have?—I am not prepared to say that. That is a question that I do not think I could answer, as to whether there is any profit on the one per cent. It must be very small.

25,667. But it would be considerable if the debenture capital is very large. It would amount, in the aggregate, to a good round sum?—I have not worked that out.

Chairman. But, however, a more serious consideration still, I suppose, is that your debenture capital must be earning the same profit as your share capital, in order to enable you to pay the sinking fund instalments without trenching upon your ordinary sources—upon your shareholders' interest.

(*Mr. Pember.*) In fact, the assumption that he pays some per cent. must be a fact.

25,668. (*Chairman.*) Yes, but the basis of the sinking fund clauses is that your debenture capital is earning the same profit as your other capital?—Yes.

25,669. If that is not realised, 1 per cent. will not go very far to help you out?—No, but at present, of course, we have not begun to pay to the Chamberlain's Fund.

25,670. (*Major-General Scott.*) The rate upon which the contribution to the sinking fund is calculated is the average of the interest earned, not only upon the shares, but upon the loan capital, is it not?—Upon the whole of the capital.

25,671. (*Chairman.*) But as you have got at the present moment a capital that is earning more than 10 per cent., you borrow half a million on debentures, and it is assumed that that half a million will also earn the same amount of profit?—Yes.

(*Major-General Scott.*) Rather less, is it not, because the debenture interest comes in.

(*Chairman.*) No; you assume that the half million will earn the 10 per cent.—you deduct the 3 per cent. you pay on your debentures and 1 per cent. for

management, and 6 per cent. goes to the Chamberlain's fund; that is it, is it not?

(*Mr. Pember.*) No, not quite, I think.

(*Mr. Balfour Browne.*) Not 6 per cent. It is the average rate. 13 Feb. '99

(*Witness.*) It is spread over the whole capital.

(*Sir John Dorington.*) But on the assumption that the other capital is paying 10 per cent.?

(*Mr. Balfour Browne.*) Yes.

(*Chairman.*) At present the whole of the capital is paying 10 per cent.?

(*Mr. Balfour Browne.*) No.

(*Sir George Bruce.*) It is only the old capital.

(*Chairman.*) The old share capital.

(*Mr. Balfour Browne.*) The old share capital, and not the debentures.

(*Major-General Scott.*) The contribution is reduced by the debenture interest.

(*Chairman.*) Quite so.

(*Mr. Pember.*) It does not make very much difference to the whole sum.

(*Chairman.*) If the debenture capital of these companies goes on increasing as it has done of late, and Parliament only allows them to raise capital by debentures, there will come a time then when the sinking fund contribution will diminish almost to nothing, will not there? I mean if the debenture capital becomes three or four times what the share capital is, then any additional debenture capital will contribute little or nothing to the sinking fund? Is not that so?

(*Sir John Dorington.*) It will gradually reduce it.

25,672. (*Chairman.*) It will gradually decrease, but, however, we need not go into these elaborate calculations, perhaps. (*To the witness.*) I should like to have your view about the economy in management that would result from a purchase of these undertakings, and having them all in one hand. Do you think, or do you not think, that considerable economy in management might be realised?—Personally I do not think there would be any great saving if the companies were all under one management.

25,673. Do you think there would be some saving?—Not appreciable.

25,674. You would save the directors' fees, to begin with?—Then if you save the directors, you must have a very highly paid staff of officials.

25,675. The committee of the County Council that would scorn payment?—The London County Council is a shifting body, and the committee which would have the management of the water companies also is shifting. I can understand that, at an election, the whole of the members of that committee might disappear; that is quite probable.

25,676. Past experience would lead us to expect that?—Then they must be entirely in the hands of, again I say, highly paid officials.

25,677. But you have got your highly paid officials have you not—you have got secretaries and engineers?—Adequately paid.

25,678. Would not a fewer number of officials suffice, if all the undertakings were in one hand?—No, I do not think that. I do not think that it could be said that the undertaking, taken as a whole now, is over-manned.

25,679. No, because your affairs are separately managed. Take, for instance, such a company as the Southwark and Vauxhall that we have been just dealing with, which has your company and two or three others overlapping three-fourths of its territory. Would not there be some economy in management there; would not one engineer do for Lambeth and Southwark?—One head engineer might do, but it would entail a great deal of work upon him, and he would have to have subordinates. I do not think that there would be any real economies.

25,680. Of course, I take your view, Mr. Boulnois?—Of course, it must be purely problematical; I can only offer an opinion.

25,681. Do you think the whole undertaking is too large for any one body to deal with?—I do.

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25,682. Supposing that you picked out, for instance, skilled persons; let us take the chairmen of the present eight companies, and some of the oldest and most experienced directors, and form them into a board, and that board had the management of all the eight undertakings, could not they do it efficiently and well?—I have not any doubt about that. All I say is that I do not know that there would be any great saving in management.

25,683. (*Sir John Dorington.*) Do you think that the details are not beyond the reach of a single board—the details which come before the eight boards of directors would not be beyond the power of one board to overlook and take control over?—A board which had nothing else to do?

25,684. That is to say a board somewhat differently constituted from the present board of directors?—A board formed for that purpose.

25,685. (*Chairman.*) Then I suppose you would think it advisable that that board should be well paid?—I believe in payment for work myself. I believe you get the best work out of men who are paid to do it.

25,686. That is not universal experience, is it? I mean there is a good deal of unpaid work in this country which is not bad—your own as member of Parliament, for instance?—I quite agree with that—I suppose I am an example of that myself. I have worked for the last 35 years in a good many directions without payment, and I have worked in some for payment.

25,687. And do not you find by experience that your unpaid work, for instance, as member of Parliament and as member of the London County Council, is quite as good as your paid work as chairman of the West Middlesex Company—perhaps, I ought not to have asked that, but still there is a good deal of excellent unpaid work done in this country; we have lived under that belief hitherto?—Most unquestionably.

25,688. (*Mr. H. W. Cripps.*) Do you know what the Thames Conservancy under the recent Act are paid?—I do not.

25,689. The whole board?—I do not.

(*Mr. H. W. Cripps.*) I think you would find they are satisfied with a very much smaller sum than you imagine. It is 3,000*l.* a year.

(*Chairman.*) Yes, we have had that figure given us, I believe.

25,690. (*Major-General Scott.*) Taking the general run of the requirements in a commercial business, do you think that a board of directors would be efficient if the directors had no pecuniary interest in the concern and no salaries, and were changed at short intervals, and were not paid agents at all?—No, I do not think that would be an efficient board—not so much on the ground that they were not paid as that they were a shifting body.

25,691. (*Chairman.*) How have the different corporations who have taken over the waterworks of their districts into their control managed to be fairly successful? They are exactly what General Scott has just described—namely, a board of directors, without payment, changed frequently, and with no interest in the concern?—Those are quite small undertakings compared with the undertakings of the eight London water companies. Any one of the Metropolitan companies supplies a population larger than the great majority of the districts in the provinces.

25,692. But that is surely a question simply of the division of labour—I mean you might have your board split up into eight committees, and each committee would only have the affairs of one company to deal with?—I cannot doubt for a moment that a board constituted *ad hoc* could carry on the undertaking just as well as if the boards of the eight water companies were combined.

25,693. But you see no advantage in that?—No.

25,694. (*Mr. H. W. Cripps.*) That is, you think that a board constituted, as you say *ad hoc*, would be better than a body like the London County Council, that has other business to attend to?—Unquestionably.

25,695. (*Chairman.*) One witness of great reputation and distinction has told us that a board of experts is an execrable arrangement. Do you share that view, and think that you ought to have a board of ordinary business men?—I think a board of ordinary business men is probably better than a board of experts.

25,696. Then you agree with Sir Frederick Bramwell in that respect?—I would not use such a strong expression.

(*Chairman.*) I am not quite sure that the adjective is not mine.

(*Mr. Pember.*) His was pretty strong.

(*Chairman.*) Yes, it was strong.

(*Sir George Bruce.*) He was right, too.

25,697. (*Chairman.*) I daresay he was. But understand me as expressing no opinion of my own on those questions. I only want to elicit your views on the various points. Have you at all given your mind to the problem of whether the cost of the purchase of the different water companies would be such as would result in any advantage to the consumers?—No, I cannot say that I have done that. Of course it would be an enormous cost, and I am not prepared to say whether it could be an advantage to the consumers. Of course, in the case of my company, it could not be an advantage to the consumer.

25,698. Any company that has reached its maximum must be bought at a disadvantage by any public authority, I suppose; that is so?—I say so.

25,699. And the nearer it has got to the maximum dividend, the greater the probability of disadvantage?—Yes.

25,700. Have you at all considered the sort of arbitration that you think would be fair in purchasing the undertakings of the eight water companies?—I think that the usual arbitration which is the recognised mode of acquiring property from a person who does not want to sell it is the one to which the water companies should be subject.

25,701. You mean an arbitration under the Lands Clauses Act?—I do.

25,702. (*Mr. De Bock Porter.*) With regard to your own company, would you consider you were unjustly treated, if you had an absolute annuity producing your present income, which is absolutely unimprovable at the present moment; and if well secured, ought not that to satisfy you?—I think, if the stock-holders received their income, amply secured as you say, they could not raise any objection, but I prefer the arbitration.

25,703. (*Chairman.*) Would you expect, do you mean, that the arbitration would give them more?—It might.

25,704. It might give them less?—It might. I do not think it could. I do not think any fair-minded arbitrator could give less in the case of the West Middlesex.

25,705. But that fair-minded arbitrator would be told, for instance; here is a revenue that has been swollen by improper application to dividend of sums that ought to have been devoted to maintenance and repairs; here is a dividend that has been improperly swollen by some management of the capital, which I cannot quite express in words, but which Mr. Gomme has explained to us—here is obsolete capital which does not represent existing works, and which ought not to be receiving 10 per cent—it is unjust and unfair that it should, and you must not take that into account. Ought a fair-minded arbitrator, in your view, not to take those things into consideration?—In the case of West Middlesex, the arbitrator could take anything of the that kind into consideration, but he would be dealing with a property which has been kept up to the highest state of efficiency, and he would have to deal with appreciation as well as depreciation.

25,706. (*Mr. H. W. Cripps.*) Would it be fair in the arbitration that you should have, on behalf of your company, and others should have on behalf of their companies, every opportunity of putting all those questions before the arbitrator before a decision is given?—What I should like would be an ordinary open arbitration under the Lands Clauses Act.

25,707. An open arbitration with power to the arbitrator to hear all parties at his discretion?—An unfettered arbitrator.

25,708. Could you looking forward in any way imagine any better opportunity to your shareholders of getting more for their interests than they would have at the present time in the state in which you say your company is? How would they gain, I mean, by delaying the arbitration for so many years?—But they do not want to sell.

25,709. That is another thing, but pecuniarily speaking, do you not think that their present position is a very favourable one for going before an arbitrator?—Most favourable.

25,710. (*Mr. De Bock Porter.*) You spoke just now about appreciation: Is not that appreciation something which you as an existing company cannot touch? You are limited absolutely to your 10 per cent. ?—Quite so.

25,711. Then why should you go for anything more than that—why should not you rest satisfied with that being absolutely secured?—My point is that I do not see why the Metropolitan Water Companies should be treated in a different way from any other water company which has been acquired by a municipality. I believe I am right in saying that there is no instance where a water company has been taken over by a municipality, except under the Lands Clauses Act, and where they have not agreed, and why a different mode of treatment should be meted out to the London companies, I am at a loss to understand.

25,712. But have you examined the cases that have already taken place, and have you found in regard to those municipalities purchasing water undertakings at the present time that the shareholders in the old concerns have been guaranteed their absolute income, as we are suggesting in your case?—I cannot enter into details or particulars with regard to the purchase of these companies by municipalities, but I am only saying that all these undertakings have been taken over by the municipalities under the ordinary recognised law of the country.

25,713. You would rather risk arbitration than have the certain income which you are now receiving?—I am not afraid of arbitration in the least in my case.

25,714. (*Chairman.*) What more do you think you would get by arbitration than your present income secured; what more do you think you ought to get?—I think I ought to get something for compulsory expropriation.

25,715. (*Mr. De Bock Porter.*) Something that you cannot touch at the present time and never will if the *status quo* remains?—I am quite satisfied with my present position, and if I am to be taken over I think I ought to have a solatium.

25,716. (*Chairman.*) I suppose you regard the security of the West Middlesex shares as being quite a gilt-edged security and next door to Consols?—Equal to Consols.

25,717. Whereas you will have to be wandering about among I do not know what corporation stocks to find an equivalent investment?—If all the companies were bought up and we will say 40 millions, putting it low, were floated on the market, the 10 per cent. would not be any too much which the shareholders might get under the Lands Clauses Act. It would not be any too much for finding a suitable investment.

25,718. (*Sir John Dorington.*) But the income you are getting 30 years hence cannot be possibly more than you get at the present time?—No.

25,719. (*Chairman.*) You have no prospective income?—No, none.

25,720. You only want to be compensated for the loss of your present income and for trouble and delay in finding as good an income in some other direction?—And a little sentiment.

25,721. Where is the sentiment? That I should like to have explained to me?—There is some sentiment. The stock-holders in the West Middlesex have held their stock from generation to generation like land. It is far better than land, of course.

25,722. Do you mean your affections have gathered round the filter beds?

(*Mr. Pember.*) Something for the loss of the lady, that is what it is.

25,723. (*Chairman.*) You think there is a sentimental loss?—I think there is a slight sentimental loss.

25,724. (*Mr. De Bock Porter.*) Has your stock recently been dealt with on the market on the 3 or 3½ per cent. basis?—3½ per cent.

25,725. So that you might have a stock that would be an absolutely good 3 per cent. investment and be worth, perhaps, 110?—You might.

25,726. You would not consider that sufficient profit, would you?—I still go back to my old answer, that I

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prefer to go under arbitration. I prefer the usual mode of dealing with matters of this kind of compulsory purchase; I prefer the arbitration, because I know that I have a magnificent property.

25,727. (*Major-General Scott.*) Is there no future before your shareholders, in your opinion, from the expenditure of further capital? Assuming that your company was retained as owners of this undertaking, with a prospect of supplying so many more million people, is there no future before your shareholders from that point of view?—No, none.

(*Mr. Balfour Browne.*) It is all sold under the auction clauses.

25,728. (*Major-General Scott.*) But the question, of course, of the terms on which you raise capital and expend it would have to be a matter of bargain between yourselves and Parliament, would it not; and would not Parliament allow you a fair commercial profit, do you not suppose, on the expenditure of future capital?—Hitherto Parliament has not done so.

25,729. But the question of the continuation of the companies has always been a matter of doubt at least for a number of years, has it not. Probably the case has never presented itself of an indefinite continuation of your undertaking, with the prospect of expending a large amount of capital to supply several more million people, but would not that as a commercial undertaking give you some prospect if you made a fair bargain with Parliament for some future profit?—If Parliament altered its mode of dealing with the water companies, there might be a prospect of larger profits.

25,730. (*Mr. H. W. Cripps.*) Parliament must, as you say, alter its mode from what it has done for some time past in order to do that?—And not deprive the companies of any future profit.

(*Major-General Scott.*) But has not the sinking fund been established as it were with a view of very approximate purchase.

(*Mr. Balfour Browne.*) It is not the sinking fund that Mr. Boulnois is referring to, it is making them raise all the capital by the auction clauses, and that does not go into the hands of existing shareholders, but into some other body's hands.

25,731. (*Major-General Scott.*) Quite so; but if it was intended that a company was to continue and supply its fair proportion of that population which Lord Balfour's Commission considered would exist in future years, would there not be some prospect of the company making a bargain with Parliament which would leave it some fair profit on the expenditure of that large amount of capital which would be necessary?—Parliament would have to alter its present mode of proceeding with the water companies.

25,732. Do you consider that it would be fair to leave the company in charge of the undertaking, with the duty of expending several millions more on the future population, without allowing it a fair commercial profit?—Of course, in my case, we are limited by Act of Parliament to the 10 per cent., and there is no profit.

25,733. But are there no contingent advantages in the expenditure of this large capital—

(*Chairman.*) Not to present shareholders.

25,734. (*Mr. Lewis.*) I suppose the only way in which the existing shareholders could benefit by the increased works referred to by General Scott is by Parliament permitting you to increase your ordinary stock?—Yes.

25,735. That is the only way?—Yes.

25,736. (*Chairman.*) Supposing works were put upon your company by the necessities of the case, by the demand for an increased supply, which would cost you, say, 10,000,000*l.*, and you were allowed to raise that capital by shares, there would be a doubt whether you could continue paying then the whole body of your shareholders the 10 per cent. that you pay them now. You might fall below the 10 per cent. for some years?—We might fall below the 10 per cent.

25,737. Your present shareholders can never get more, and they might by large expenditure be reduced to something less?—That is the position they might be in if you put it in that way—if an enormous sum had to be expended which was not immediately remunerative.

25,738. Let me take a concrete example—there is nothing like that. Supposing the overwhelming force

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of public opinion drove you to Wales to get a supply from there, and that that involved an expenditure of some 20 or 30 millions, spread over 10 or 15 years, during which there was no return; it might be that during those years your existing shareholders would get less than their 10 per cent. dividend?—That might be so.

25,739. Therefore, the position of your favoured company is this: that your present shareholders cannot be better off than they are, but they might, by large future expenditure, be reduced to some worse condition?—They are quite willing to run the risk of that.

25,740. However, I presume you say you think you ought to be treated as everybody else has been treated and arbitrated upon under the Lands Clauses Act, and I suppose you would strongly object to the peculiar and special arbitration clauses that have been suggested by the London County Council?—Yes, strongly.

25,741. I mean, do you approve of the idea of allowing an arbitrator to have the powers of an Act of Parliament; for instance, that is to go behind Acts of Parliament and repeal them in effect by his award?—No, I do not. The proposed clause of the London County Council makes the arbitrator above all law and above Parliament.

25,742. Yes, as far as I understand it, it does so. Do you think these sinking fund clauses will end by diminishing or doing away with the rebate that you have been able to give to consumers?—I think so. I think it must eventually turn out so. We have not begun to pay yet, but we shall have to pay something like 20,000*l.* a year to the Chamberlain Fund, and that is a little short of the amount which we are paying back to the consumer now.

25,743. So that you will have to pay away the rebate you now give to the consumers?—It must ultimately come from the consumer's pocket.

(Chairman.) Of course it cannot come from anybody else's that I can see.

25,744. (Mr. De Bock Porter.) Then if the rebate goes, do you think the interest upon your capital is in danger too—the dividend?—I think it is.

25,745. (Chairman.) Do you mean it is possible that the effect of the sinking fund clauses may be, not only to deprive the consumers of the benefit of the rebate, but actually to entrench upon the dividend your shareholders get?—I think that is quite possible. Everything, of course, depends upon the increased business which they get from the increased capital.

25,746. Yes, everything depends upon the profit you can get out of your debenture capital?—Yes.

25,747. (Mr. De Bock Porter.) If that is possible, might not it be wise to take an absolute annuity?—Again, I say, we are quite willing to run the risk. We have got a fine business which we believe can be made more prosperous than it is even now.

25,748. (Major-General Scott.) More prosperous as regards yourselves?—It cannot be more prosperous to the shareholders than it is at the moment, unless Parliament alters its way of dealing with us.

25,749. Are you willing to take the risk without any prospect of contingent advantage? You say you are willing to take the risk of continuing and going to Wales, and so on. Surely it is not usual for people to take a risk without a prospect in their own minds of some contingent advantage to compensate them for that risk. Have you no contingent advantage in view in doing that?—There cannot be any advantage, as I say. The shareholder has got his 10 per cent., and he cannot get any more unless Parliament alters its mode of dealing with us.

25,750. But do you hope that Parliament will?—It is quite possible. I think that the companies have been somewhat unfairly dealt with by Parliament, and I have great hopes that some day they may see that an injustice has been done, and that they will alter the mode of dealing.

25,751. (Mr. Pember.) I suppose your evidence is given on the supposition that the sinking fund will be abolished if purchase takes place?—Certainly.

25,752. (Mr. De Bock Porter.) But do not you think that if Parliament sanctioned the abandonment of the sinking fund it would require some equivalent out of the companies?—The amount that goes to the sinking fund belongs to the companies, and I do not know that Parliament ought to expect anything.

25,753. But hardly—they cannot divide it—it has to be impounded for the benefit of the public?—No; in my case it belongs to the consumer, and if the consumer in my district only understood the question, I have no doubt he would go to Parliament and plead his cause in person before a committee, if he could get any locus.

25,754. (Chairman.) That is one difficulty that I have felt here, that we have nobody who represents the consumer or even the ratepayer?—I represent the consumer in my district as well as the company.

25,755. In which of your various capacities are you representing the consumer—as Member of Parliament do you mean?—As Member of Parliament and as member of the London County Council. I have been sent four times to the London County Council to represent the consumers' interest in the water question.

25,756. I do not know whether your attention has ever been directed to this, but it is a difficulty which has occurred to my mind, and which nobody that has appeared before us seems to be competent to deal with, and it is this: Supposing the London County Council became the purchaser of the eight London water companies; we know that they intend to go to Wales, and to spend a sum of money that I will not attempt to fix, in order to bring water from Wales; the necessity for that will be largely the needs of the outside districts, will it not?—No doubt.

25,757. On the other hand, the expense will fall upon the London ratepayer just as much as upon the Middlesex, or the Essex, or the Hertfordshire ratepayer in the outside districts?—It seems to me to be so.

25,758. Then that will be making London pay for the supply of needs that are not London needs?—Just so.

25,759. I do not know whether you can suggest any scheme of amalgamation or purchase by which the risk of that injustice would be avoided?—I am afraid I cannot; the only thing that I can suggest is that things should remain in *statu quo*.

25,760. In fact, you think the existing companies are the best mode of supplying London with water?—I do. The ratepayer looks to the water company to supply him with water, and he is at no risk himself.

25,761. Let me suppose that a supply from Wales became necessary, just to take that for a moment, I am not saying it is so, but assume that a supply from Wales becomes necessary, that means a large expenditure; and do you think the London water companies are capable of combining to meet that expenditure fully and frankly?—I do.

25,762. You see they have shirked even the comparatively trivial expenditure of the Staines Reservoirs, only three of them have had the courage to join in that undertaking?—We must proceed by degrees in those matters.

25,763. But there are a good many degrees to jump up?—Of course the Staines Reservoirs Scheme was a new departure, and water companies are like other bodies; they do not move as rapidly, perhaps, as individuals. But I look forward to the time when the whole of the companies will come into one scheme, of either amalgamation or federation.

25,764. Do you think amalgamation possible?—I think it is quite possible. There are difficulties, no doubt, but they are not insurmountable.

25,765. We were told there were difficulties about rates, and other difficulties of various kinds that were really quite insurmountable?—No doubt; but the gas companies could amalgamate, and I see no reason why the water companies should not, also.

25,766. (Mr. H. W. Cripps.) An Act of Parliament would be absolutely necessary in the case of an amalgamation to alter the different rates of the companies as they exist at present?—Yes, necessarily.

25,767. (Chairman.) To take that subject about rates, do you think any equalisation of rates in London is a practicable thing?—It is practicable, of course, but I think there would be a loud outcry.

25,768. I suppose there would not be an outcry if all the rates were cut down to your present rates?—No.

25,769. Except on the part of the shareholders in the other companies?—No, but the ratepayers would suffer very considerably. The consumer, of course, would say nothing. He would be satisfied, but the ratepayer would not.

25,770. You mean it would have to be made up out of the rates?—Yes, undoubtedly.

25,771. There would be a large deficiency, of course?—There would be a large deficiency.

25,772. A deficiency of something like a quarter of the present total income?—?

(Mr. Pember.) 240,000*l.* a year it is fixed at, you remember.

(Chairman.) 250,000*l.* odd.

(Mr. Pember.) I am not quite sure—I have got it somewhere—but I rather think you are right.

(Chairman.) I thought it was over 250,000*l.* for the whole of Water London.

(Mr. Pember.) Yes; it was 161,000*l.* for some of the companies, and then Mr. Goldney, the Remembrancer, added up the rest to over 250,000*l.*, I think.

25,773. (Chairman.) Now about control. I do not know whether you have considered whether any further control of the companies would be beneficial to the public?—I see no necessity for further control. We are already controlled in a manner which is peculiar to London. I do not think that any water companies outside London are controlled in the same way. There is the Water Examiner, the analyst, and the Government auditor, in addition to which, of course, there is the Railway Commission, which was set up by Parliament in 1897, to whom the consumer can take his grievance through the local authority.

25,774. You have not been much troubled with the local authorities, have you, under that Act?—No, I do not think there has been any case. The only case that I heard of was, I think, when the Hackney vestry wanted to take the East London Company before the Railway and Canal Commission, but they could not get any help from the London County Council.

25,775. What sort of help did they want; do you mean the London County Council would not take up the case?—No.

25,776. I suppose they were advised that the exemption from the consequences of drought made it impossible to bring a case?—No doubt the London County Council were advised that there was no case.

(Mr. Freeman.) The Hackney Local Board took their own proceedings, and the case is pending now.

(Chairman.) Do you say the case is pending?

(Mr. Freeman.) Yes.

(Mr. Balfour Browne.) The case is pending before the Railway Commission.

(Witness.) No doubt, but they did apply to the London County Council for aid, which—I think I shall not be contradicted by the representatives of the London County Council in saying—was refused.

(Chairman.) The London County Council were, perhaps, better advised than the Hackney vestry.

(Mr. Pember.) It has been pending a long time, and has not come off.

25,777. (Mr. De Bock Porter.) You said just now that you were in favour of the *status quo*, but you admit that federation might be an advantage, and amalgamation, I suppose, a still further advantage; it would tend to economy, would it not?—I do not think there would be any real economy—nothing appreciable in the way of economy.

25,778. But would it not be advantageous for some companies to get their source of supply at the nearest point to where the water is to be distributed?—With the exception of Kent, they go to the Thames now, and they go as near as they can.

25,779. (Chairman.) Yes, but you know we have the East London, for instance, fetching water from the Thames by a roundabout route to supply their district, whereas if they and the New River, and the Grand Junction, and West Middlesex Companies were all one, the Thames supplies could go to these companies, and the Lea supplies could go to the East London?—No doubt if the whole water supply of London was being started *de novo*, that would be the best way to carry it out.

25,780. (Major-General Scott.) Take the case I referred to the other day, where the New River Company are proceeding to take water across London to their own district from the Thames. We have had before us an

estimate from the East London Company, with a proposition to secure ultimately a supply of 25,000,000 gallons a day; also from the Thames. Now, in a case of that sort, would it not be an economy for the two companies together to carry out that scheme jointly, or such a scheme jointly, as would satisfy their joint necessities?—Economy in capital, do you mean?

25,781. Economy in capital expenditure. Surely it is more economical to make one project of a scheme of that sort, and to carry the total scheme through to their districts together, and share the expenses, and to split the supply when they arrive at the points where it is respectively required?—That is really an engineering question, and I am afraid I cannot answer that. It is a question of cost.

25,782. Assuming it would be an economy, it is an illustration of the advantages of amalgamation?—No doubt.

25,783. (Mr. Lewis.) I should like to ask one question with regard to the back dividends; how is it you did not go beyond 1852—how is it you did not go back to 1847—was there anything in your private Act about that?—It was a legal question. But the secretary will give the information about that.

25,784. (Sir John Dorington.) You complained that you have been put to considerable Parliamentary costs and costs due to Royal Commissions, and that sort of thing. Suppose you maintain the *status quo*, do you think there would be any prospect of being relieved of those expensive things in future?—That depends upon the London County Council.

25,785. That is hardly my question?—I thought you asked whether—

25,786. Whether you thought there was any prospect, if the *status quo* were to be maintained, of your being relieved from the great Parliamentary costs you have incurred during the last few years and of which you complain. Of course that is only asking what your judgment would be of the future. What do you think your prospects would be—would these things settle themselves down?—I think if the companies were let alone we could carry on our business without interruption, and do it uncommonly well.

25,787. (Chairman.) But the question is whether you are likely to be let alone?—There is no appearance, speaking generally, that we are likely to be let alone.

(Mr. Pember.) You cannot stop a dog barking unless you kill him.

25,788. (Mr. De Bock Porter.) As a county councillor, do you think that the London County Council would not be able to manage this undertaking?—The County Council have an enormous deal on their hands, and I do not think that they would be able to manage it efficiently.

25,789. (Chairman.) Would not they be just as good as any local corporation; we know already from our experience here that they have extraordinarily able advisers?—The undertakings of the whole of the companies are so vast compared with anything that you can compare them with in any provincial town. If you take even Glasgow, which has a population of, I forget now what, but the largest population, at all events of provincial towns, it is a very small affair compared with what the whole undertakings of the eight London water companies would be.

25,790. (Sir John Dorington.) And their water is close at hand comparatively?—Their water is comparatively close at hand.

25,791. (Major-General Scott.) Assuming that the London County Council acquired the undertakings, do you see any prospect of smooth working with the outside districts? As you know, the outside districts have raised considerable objections to any scheme which would bring them into conjunction with the County Council in the management of the undertakings, and do you think, assuming that the London County Council acquired the undertakings, the relations of the management and arrangements with the outside authorities would work smoothly?—I think there would be always friction.

25,792. (Chairman.) You have not, of course, considered the question how far severance is possible?—No, I have not.

Cross-examined by Mr. BALFOUR BROWNE.

25,793. First, with regard to friction with the outside authorities, I daresay you know the proposal was that

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each outside authority might become the purchaser of the mains and sources in its own area. If that were done, there would be no friction, of course?—No, if that were done; but that is, of course, an engineering question.

25,794. Whether it is possible or not is an engineering question, and I will not go into that. Now, with regard to amalgamation, you said in answer to a question put to you by one of the Commissioners, that you thought amalgamation was quite possible?—Yes, quite possible.

25,795. Do you think it would be of advantage to the consumers?—No, I do not think it would be any advantage to the consumer in my district.

25,796. No, but for the consumers of London generally, do you think it would be an advantage or a disadvantage?—No, I do not think it would be any advantage or disadvantage.

25,797. Neither one nor the other?—No, I do not think it would alter things.

25,798. But, for instance, taking what his Lordship suggested, that public opinion forced the companies to go to Wales, you would not propose that the eight companies should go separately, would you?—Oh, dear, no.

25,799. There must be amalgamation, at any rate, for any such scheme?—Yes.

25,800. (*Mr. Pember.*) There need not be amalgamation; their may be combination?—Yes.

(*Mr. Balfour Browne.*) I said amalgamation for that purpose. I think my phrase was nearly as good as yours. I said for that purpose.

(*Mr. Pember.*) You did.

25,801. (*Mr. Balfour Browne.*) Now, with regard to the arbitration that you suggest. You think the Lands Clauses Act should be applied, because, as I understand, you think your company would get an allowance as *solatium* under that Act; is that the idea?—They might.

25,802. Suppose the company got the fair and full value of their undertaking, would not you allow the arbitrator to have the very fullest powers possible to investigate that matter as to what was the fair and full value?—Certainly.

25,803. If it were merely a transfer of a share from the hand of the shareholder for scrip of the County Council, we will say, what more does he want beside that—should he get 10 per cent. for merely the changing of two pieces of paper?—I do not know that the arbitrator would give 10 per cent.

25,804. No; but I ask you, do you think he should have it? Supposing you have an income from the West Middlesex Company, you have a share certificate just now, and you exchange that share certificate for the promise on the part of the purchasing authority to pay you exactly the same income, should you have anything beyond that?—No, you are not going to arbitration over that.

25,805. I assume that is another possibility that we might arrange; and, in that case, there would be nothing beyond the mere security for your income, as good in the future as it was in the past?—I have said that if the stockholder receives his income on a security as good as what he gets now, of course, he could not be dissatisfied; but the security must be—

25,806. As good?—As good.

25,807. Certainly. Now, tell me if there were amalgamation, amalgamation would, of course, involve, would it not, the equalisation of rates?—Yes.

25,808. Does it not strike you as being a little hard, that the rates in the poorest districts of London are higher than in your rich district? For instance, I have before me this illustration. In a house exceeding 100l. a year in the Lambeth district, a man has to pay for the first watercloset 20s., and for the second 10s.—that is, supposing he has two waterclosets in his house—he pays 30s.; and in your district, I see that he pays 8s. for the first, and 4s. for the second, which is 12s., and off that he would get a rebate. Now, is not it rather hard that because one man lives in Lambeth he should have to pay 30s., while if he lived in your district he would be paying 12s., and getting a rebate?—That may seem hard.

25,809. From a general Londoner's point of view?—From a general Londoner's point of view.

25,810. You know that you had powers to supply in the very districts—Lambeth, Battersea, and Wandsworth, I think—which the Lambeth Company are supplying; if you had supplied, they would have had the benefit of your lower rates?—I am not sure about that.

25,811. Forgive me, you could not have charged more?—No; but there would, of course, be the expense of crossing the water, and putting the reservoirs there. I do not say it would necessarily, but it might probably have been that the water could not have been supplied at so low a rate.

25,812. It might have been possible that the people in Bryanston Square, and round about there, would not have got the rebate so soon; but you could not have charged more for two waterclosets than 12s.

(*Chairman.*) But the inference I draw is, that their rates would not have paid them to go Lambeth, and that is why they did not go.

(*Mr. Balfour Browne.*) I do not know that; their rates were upon the foundation that they were to go to Lambeth.

(*Witness.*) No—

(*Chairman.*) Is it not a fact that it is less per thousand gallons?

25,813. (*Mr. Balfour Browne.*) Is it not a fact that, in your original Act of 1810, there is this: You came in really as a competing company, did you not, originally?—Originally.

25,814. This was enacted, "That it shall not be lawful for the Company at any time hereafter to sell or dispose of any of the rights, privileges, powers, or authorities, vested in them by this Act, of supplying the said parishes and places"—some of these being in Lambeth district—"with water, or any of such parishes, or any part of any of them, to any other water company now existing, or which may hereafter be established for the supply of water, or to any person or persons whomsoever, but only to take and demand such sums as shall be reasonable for the water supplied under the provisions of the Act." Now, do you know that when you got your rates fixed that that clause was not repealed, but was continued?—I am afraid you are going into a past history of the company, with which I am not very familiar.

25,815. Very well, I will not ask you about it?—I would say that one of the secrets of the success of our company is that we have minded our own business, and we have kept within our own district.

25,816. You minded the business of the rich people in the West End, and not the poor people in Lambeth. That may be the cause of the success. You did not mind all your own business, but only a bit that you picked out for yourselves. Besides the 10 per cent. that you have had from 1852 down to the present time, when you have paid your back dividends, is it a fact that you have distributed, by way of premiums amongst your shareholders, something like 728,000l.?—I am afraid I cannot answer that. The secretary, I am sure, will be able to answer those questions.

25,817. You paid your back dividends up, and had nothing further to look to after the year 1887, except your 10 per cent., is that so?—Yes.

25,818. Before that time I find that your maintenance and management was always kept down. After that time I find the most remarkable rise in maintenance and management. How do you account for that—

(*Mr. H. W. Cripps.*) Have you the figures for that there?

(*Mr. Balfour Browne.*) Yes, I have.

(*Mr. H. W. Cripps.*) Because it depends upon amount.

25,819. (*Mr. Balfour Browne.*) Take the year 1887—or, perhaps, I ought to begin with 1886. As regards maintenance in 1886, there is 29,232l. spent; in 1887, 32,628l. Then they paid their back dividends. In the next year, 1888, it goes up to 45,368l. With regard to management, it had been 15,900l.; it goes up to 16,200l., 16,800l., 16,900l., 18,786l., 22,000l., 22,600l., and in the last year that I have, 1894, it is 21,131l. Can you account for that?—I really cannot follow those figures, I have not them before me.

25,820. Take it that maintenance and management together were, in the year before you paid your maximum dividends, 68,000*l.*; next year, when you had paid your maximum dividend, and could earn not a penny more profit, they went up to 82,545*l.*, and they have gone up in 1894 to 91,876*l.*?—I think you will have to put those questions to the secretary.

25,821. However, do you not see you have no really great inducement to keep down the working expenses now. It does not matter to you whether you do keep them down—it only has to be paid away to the consumer?

(*Mr. H. W. Cripps.*) I think Mr. Boulnois has stated that very fairly and frankly over and over again.

(*Mr. Balfour Browne.*) He has.

(*Sir George Bruce.*) Have not the receipts increased in proportion?

(*Mr. Balfour Browne.*) The ordinary income?

(*Sir George Bruce.*) The expenditure on works would go on increasing year by year.

(*Mr. Balfour Browne.*) I do not think the works have been greatly added to, but I see the income has gone from the year 1887, when it was 210,572*l.*, in the next year to 204,000*l.*—that is down. The next year it is 203,000*l.*, then it goes up to 209,000*l.*, 212,000*l.*, 215,000*l.*, and 221,000*l.* I think those are the figures—I have taken them out.

(*Mr. H. W. Cripps.*) I have got the maximum increase in expenses; what is the maximum increase in the ordinary income?

(*Mr. Balfour Browne.*) I think it has increased from 210,000*l.*; and, although it went down, it has come up now to 226,000*l.*

(*Mr. Pember.*) Yes, but are you there dealing with the fact that they have made a reduction in the rates they have charged since they paid up their back dividends, that, of course, the income has not increased in the ratio shown before.

(*Mr. Balfour Browne.*) It is the income before the rebate—otherwise, there would be no increase at all; it would have been kept at the same income.

(*Mr. Pember.*) That is what I say; you ought to consider the income plus the rebate.

(*Mr. Balfour Browne.*) Exactly, that is the position I take up. Their income has not really increased. It is only a seeming increase. They have had to pay back, as Mr. Boulnois has said, only it makes it the more extraordinary that the expenses have gone up so largely.

(*Mr. Pember.*) Exactly the other way.

(*Witness.*) I believe there is a complete answer to that. If you do not mind, will you put the question to the secretary?

25,822. (*Mr. Balfour Browne.*) By all means, if you do not want to answer it. You said London was too big for the London County Council to manage as to its water affairs, but it manages the main drainage of London, which is a very considerable thing, is it not?—It is a large affair, the main drainage.

25,823. You said it was quite possible that the committee, from its shifting nature, might be changed at the next election, but I think, ever since the beginning, you have been a member of the London County Council?—Yes.

25,824. So that there are some non-shifting elements?—Undoubtedly, but I can conceive an occasion when the ratepayers might sweep the board.

25,825. That, of course, might be quite possible. It is quite obvious, for instance, that if last year you had increased (I do not say you did, at all) every item of expenditure by 10 per cent., that would not have mattered to the company at all; it would only have reduced the rebate to the consumer. In fact, it might have wiped out the rebate?—Quite so.

25,826. Has your rebate been steady, or has it been decreased recently?—The rebate, as I said, began at 5 per cent., it was then 7½ per cent., and is now 10 per cent.; and the 10 per cent. has been in existence for some years—over four years.

25,827. One question referring to a matter that was asked of another witness, but which you can answer me on, because you represent the West Middlesex Company. Is it not a fact that at one particular date which I can give you immediately—1852—your 100*l.*

shares were written down to 61*l.*?—I think you must refer to the secretary.

25,828. By all means, if the secretary will look into it. I have the record here, and I can put it to him?—I think he can answer that.

(*Mr. Pember.*) That is what I was going to ask the secretary.

(*Mr. Balfour Browne.*) I think it is more natural to ask it of the secretary.

(*Chairman.*) I think this matter has been gone into already.

(*Mr. Balfour Browne.*) It has been gone into.

(*Mr. Pember.*) I do not think this was fully explained. It has been gone into, but not fully explained.

(*Chairman.*) I am sure there was a good deal of evidence about it.

(*Mr. Pember.*) There was a partial explanation given, but not quite all.

(*Mr. Balfour Browne.*) However, I will ask the secretary that one question.

Re-examined by Mr. PEMBER.

25,829. My friend suggested to you that when you took your rates, you knew very well you had to supply Lambeth. Now, as a matter of fact, you had no rates in any Act of Parliament at all till the year 1852, I think?—That is so.

25,830. Your Act of 1810, to which my friend referred, I see merely says that you are to take and demand such sums as shall be reasonable for the water supplied under the provisions of this Act?—Yes.

25,831. Your schedule of rates was fixed in 1852, and we know *ad nauseam* the point at which they were fixed. Is not that the Act which, under section 33, provided that you should not be bound to furnish any supply of water, or lay down any pipes for such purpose in any part of the district, which part is, for the time being, supplied with water by any other company?—Yes.

25,832. As a matter of fact, that is what let you off supplying Lambeth, is it not?—I believe so.

(*Mr. Pember.*) I will either put this as a question to Mr. Boulnois or ask your Lordship just to refer, either mentally or actually, to Question 2621, where Mr. Haward handed in a table showing what the expenses of management had been of the various companies per million gallons average daily supply since the year 1871. Heaven forbid that I should say that is the proper way of taking it, but, as a matter of fact, I see that in 1872 the expense for management of the West Middlesex Company per million gallons was 938*l.* and some odd shillings and pence. It rose in 1878 to 1,157*l.*, and it hung about 1,000*l.* and 1,100*l.* for several years, till at last, in the two last years of all—

(*Chairman.*) It sinks.

(*Mr. Pember.*) In 1896 and 1897 it dropped for the first time to very nearly the original figure of 1872.

(*Chairman.*) That is management alone.

(*Mr. Pember.*) That is management alone.

(*Chairman.*) The table upon which Mr. Balfour Browne's questions were based is a table, which was handed in at Question 3510.

(*Mr. Pember.*) Quite so. I do not care which I take, but I took these because they were convenient.

(*Mr. Balfour Browne.*) It is principally in maintenance that the amount went up, and that is why I combine them.

(*Mr. Pember.*) I have a table before me showing the total annual expenditure of the company. I see that it has gone up, as you may expect, because the business has increased very largely by wages and all that sort of thing; but, as a matter of fact, although it starts from 4,189*l.* in 1872, and it rose up to 5,619*l.* in 1879, it has dropped from that point of 5,619*l.* down to 4,862*l.* in 1894.

(*Chairman.*) The year of the completion of the back-dividends and the 10 per cent. was that?

(*Mr. Balfour Browne.*) 1887.

(*Mr. Pember.*) If you take 1887, it is a trifle over, but only a trifle over, what it was in 1894.

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Mr. E. Boulnois, M.P. (Chairman.) It jumped between 1887 and 1888 from 4,626l. to 5,496l.

(*Mr. Pember.*) Quite true, it has gone down again.

13 Feb. '99 (*Mr. Balfour Browne.*) With the exception of the New River, it is the highest of all.

(*Mr. Pember.*) I will deal with them all one after the other as they come into the box; I am not like the late Julius Cæsar. It has dropped from the high point which you have mentioned, of 5,643l., in 1892, at which amount it had been as well in 1879, so that it cannot have been on account of lax management in consequence of the 10 per cent., but it has dropped down to 4,862l., which is among the lower of the sums.

(Chairman.) I think, Mr. Balfour Browne referred to the table put in at Question 3510. That shows in the last column the annual increase in maintenance year by year since 1887, that is, since the company has become disinterested in economy. The table shows the expenditure before maximum reached, and then after maximum reached.

(*Mr. Pember.*) I am sorry to say my head is not very quick, and I cannot analyse that table, but I know the secretary will do it. I happen to have another one before me, and I have had time to see about that.

(Witness.) I should like to say before I leave the witness chair what gratification it would be to myself and the Staines Reservoirs Committee if we could induce the Commission, before they finish their labours, to pay a visit to the works. They are so far advanced now as to give a very good idea of what the ultimate effect would be.

25,833. (*Mr. Balfour Browne.*) They are under water to-day, I am afraid?—They may be under water to-day, but we can take the Commission down, I hope, on some other day.

(Chairman.) I can only personally say that I am very much obliged to you. The works would be of the very greatest interest.

Witness withdrew.

[Adjourned to to-morrow at 12 o'clock.]

FIFTY-SECOND DAY.

Tuesday, February 14th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
Sir JOHN EDWARD DORINGTON, Bart., M.P.
Sir GEORGE BARCLAY BRUCE, Knt., C.E.
ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
HENRY WILLIAM CRIPPS, Esq., Q.C.
ROBERT LEWIS, Esq.

CECIL OWEN, Secretary.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C. appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.

Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.

Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. F. H. Wybroo.

MR. FRANK HENRY WYBROO called and examined.

14 Feb. '99 25,834. You are the secretary to the West Middlesex Company?—Yes.

25,835. And have been since 1891?—Yes.

25,836. You were assistant secretary in 1882?—Yes.

25,837. And you are secretary to the Staines Reservoirs Joint Committee?—Yes.

25,838. Have you prepared a return showing the financial condition of your company at this moment?—Yes.

(The witness handed in Return. See Appendix W, 1.)

25,839. Just state what the return is?—It is a return of the number of directors and officials; of the ordinary stock; of the stocks and loans with rate of interest; of the gross and net profits; of the interest paid on preference and debenture stock—

25,840. Then there is a balance sheet up to 1898, but I do not see the gross and net profits in 1898?—Under the head D. you will see that.

25,841. Can you explain why your net profits fell so much in the year 1895?—On account of the expenditure for the frost.

25,842. Did the frost affect the profits in 1894 as well?—Not in 1894.

25,843. In 1894 they fell 10,000l. as compared with 1893?—Because the rebate to the consumer was increased; and, of course, that had the effect of reducing the net profits.

25,844. Then the diminution of net profits in 1894 is due to rebate?—Entirely.

25,845. But the diminution in 1895 is due to the frost?—Yes.

25,846. Then in 1896 I see it recovers somewhat?—In 1896 the expenses on account of the frost continued.

25,847. And in 1898 you recovered a little?—Yes.

25,848. What was the total amount of rebate that you had allowed up to Midsummer, 1898?—201,787l.

25,849. Did that amount to 10 per cent. upon your total charge, or what was the percentage?—From Midsummer, 1887, the rebate was allowed at the rate of five per cent., it was increased to 7½ per cent. in 1891, and since Midsummer, 1894, it has been allowed at the rate of 10 per cent.

25,850. (*Mr. Mellor.*) Is that a rebate to a large consumer?—To every consumer—every ratepayer—in the company's district.

(*Mr. Pember.*) It is not that sort of rebate at all, sir—it is a rebate arising from the fact that they have got a surplus after paying their maximum dividends.

(*Mr. Balfour Browne.*) It is not a rebate at all. They are bound to reduce the charges to the consumer when they have made up their maximum dividend.

(*Chairman.*) Call it what you like, rebate is not a bad word for it—it is a reduction of the charges.

(*Mr. Pember.*) It is a good word.

(*Mr. Balfour Browne.*) The Act of Parliament says they are to reduce the charges, and it is not a rebate.

(*Mr. Pember.*) The Act of Parliament does not supply the substantive and we do; that is all.

(*Mr. Mellor.*) This is a statutory reduction, as I understand.

(*Mr. Pember.*) Yes, but rebate is a shorter word.

25,851. (*Chairman.*) You are not bound to make that reduction or rebate of charge to your customers unless you have got your full dividends, and unless you have got your reserve fund up to the statutory amount?—That is so.

25,852. In 1895 had you sufficient net profits to pay the 10 per cent. dividend to keep up your reserve, and to give the rebate?—No.

25,853. What did you do then?—In consequence of the expenditure caused by the great frost, the company's income was insufficient without reducing the rebate to pay the 10 per cent. dividend, and rather than so interfere with the rebate to the consumers, the directors took 20,000*l.* from the reserve fund, but there was no obligation on the company to do this, and they might have reduced the rebate and increased the charge to the consumer, and thus have raised the 20,000*l.* instead of taking it from the reserve fund, and the company would claim still to have the right of increasing the charges in order to replace the amount taken from the reserve.

(*Mr. Pember.*) I think the honourable Member did not hear it all, it might be put shorter; in 1895 they were 20,000*l.* short of what had been the rebate, and the 10 per cent. They took that from the reserve fund: and of course can subsequently if they like replace it. They did not lower the rebate.

25,854. (*Chairman.*) Was there any rebate in the year 1886-7?—It commenced from Midsummer, 1887.

25,855. (*Mr. Mellor.*) I see the net profits are put down at 141,000*l.* in 1886-7; did you pay any what you call rebate in that time?—Yes. In 1886 the net profits were 141,149*l.*, and the next year they fell to 120,062*l.* That was on account of the 5 per cent. rebate being allowed upon all rates from Midsummer 1887.

25,856. Why had you not allowed it before—that is what I wanted to know?—Up to that time we had not paid the dividends and the back dividends.

25,857. (*Chairman.*) I see you had three very good years just then—your profits were 140,324*l.* 132,142*l.* and 141,149*l.* in 1884, 1885, and 1886 respectively?—Yes.

25,858. (*Mr. De Bock Porter.*) I suppose your rebate is a limited sum, it does not absorb the whole of the income after deducting that which you are enabled to divide amongst your shareholders; is there not a margin to carry forward every year?—There is a small margin, but by our last Act of Parliament we are not allowed to carry forward at the end of the financial year more than a sum of 10,000*l.*

25,859. Will you not be able to replace the sum that you took from your reserve fund by that margin in the next two or three years?—I hope we shall; we have replaced 10,000*l.* of it.

25,860. (*Chairman.*) I do not think we need go into the effect of the sinking fund clauses with you; we had that from Mr. Boulnois. In effect what is paid under the sinking fund clauses comes out of the pockets of the consumers?—Yes.

25,861. The total debenture stock that you were entitled to raise under your Act of 1894 is, I believe, 440,000*l.*?—Yes.

25,862. And the sinking fund payment upon that would amount to what?—If the dividend remains at its present state, it would amount to about 20,000*l.* a year.

25,863. That would be applied to the sinking fund at the expense of the present consumer?—Yes.

25,864. Do you suggest that it will come out of the pocket of the West Middlesex consumer, for the benefit of the metropolitan ratepayers?—That is in the event of a transfer of the companies. If the rates are equalised, the West Middlesex consumer will suffer, either by having his water rates raised, or if they are all lowered to the level of the West Middlesex rate, the consumer in the West Middlesex district will have to pay a rate-in-aid, because if the rates are lowered, there must be a rate-in-aid to make up the deficiency.

(*Mr. Pember.*) It is even true now before purchase. On the assumption that the sinking fund were ever taken by the Chamberlain for general purposes, or even without that, in his own hands, now it is accruing for the benefit, not of the West Middlesex shareholders, but for the benefit of all London—that is the theory—so that the West Middlesex are finding their share.

25,865. (*Chairman.*) At present the Chamberlain is bound to invest your sinking fund in your shares?—Yes. I might explain that we have not paid anything yet.

(*Mr. Pember.*) Never mind that.

(*Witness.*) It commences to accrue from last Michaelmas. The first payment will be made after Michaelmas next.

(*Mr. Pember.*) But on the assumption that payments are made, what he takes from the West Middlesex coffers, he holds, not for the benefit of the West Middlesex consumers, but for the benefit of London generally; that is quite clear.

(*Chairman.*) No, he holds it for the benefit of any purchaser of the West Middlesex.

(*Mr. Pember.*) But there is not to be a single purchase of the West Middlesex; it will be a purchase of all the companies, and that purchase of all the companies will be done on behalf of Water London.

(*Chairman.*) But there will be a separate bargain with each company.

(*Mr. Pember.*) Suppose there is.

(*Chairman.*) As I understand the sinking fund clauses, the amount paid by any one company will go for the benefit of the purchaser of that one company.

(*Mr. Pember.*) The purchaser is the general purchaser.

(*Chairman.*) Yes.

(*Mr. Pember.*) I mean this amount of money goes out of the pockets of the West Middlesex consumers themselves, and never comes entire into those pockets again.

(*Chairman.*) No, it is a dead loss to the West Middlesex consumer—that I quite agree.

(*Mr. Pember.*) That is the point.

(*Mr. De Bock Porter.*) It is a payment to a common fund.

(*Mr. Pember.*) Yes to a common fund and therefore it must be *pro tanto*, and that is what Mr. Boulnois said and that is what Mr. Wybroo said, it must be a loss to the West Middlesex consumer in whatever way you treat it.

(*Chairman.*) It is a loss to the West Middlesex consumer.

(*Mr. Pember.*) That is what he said.

(*Chairman.*) I do not see that it is for the benefit of the Metropolitan ratepayer.

(*Mr. Pember.*) At all events, it will never come back to the West Middlesex, my Lord, unless Parliament does the really just thing, that is, hands back the sinking fund in proportion to the contribution from the companies.

(*Mr. De Bock Porter.*) The only advantage the West Middlesex gets is that it will tend to keep up the price of West Middlesex stock.

Mr. F. H. Wybroo.

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Mr. F. H.
Wybroo.
14 Feb. '99

(Mr. Pember.) What will?

(Mr. De Bock Porter.) The sinking fund.

(Mr. Pember.) Do you mean to the shareholders?

(Mr. De Bock Porter.) Yes, to the shareholders.

(Mr. Pember.) I do not know about that.

(Mr. De Bock Porter.) If the Chamberlain must invest in the West Middlesex stock, that tends to keep up the price, does it not?

(Mr. Pember.) If there is constantly a piece of investment going on, of course that tends like everything else on the Stock Exchange to keep up the Stock Exchange price no doubt; but that is all—it must be a drop in the ocean, and it is not the consumer who benefits by that.

(Chairman.) I see the market price of your stock keeps steadily rising from 1883 down to the present day with a drop here and there, but on the whole there is a rise.

(Mr. Mellor.) It has risen from 240*l.* in 1883 to 310*l.* 15*s.*

25,866. (Chairman.) So that your stock to a purchaser now is producing a little over 3 per cent.?—About 3½ per cent.

25,867. Is it true that in your district the poorer class pay more than the rich?—No, on the contrary, the poorer pay less than the rich.

25,868. What does a man paying 30*l.* for his house pay in water rates with you?—1*l.* 8*s.* 4*d.* a year, that is 4 per cent. less the rebate.

25,869. Has he any extras?—No extras are charged up to 30*l.*

25,870. Have you a right to charge extras?—No.

25,871. We were told by Mr. Haward that the cost of management and maintenance jumped up suddenly in your company when you became prosperous?—Will you deal with the case of management first?

25,872. Take management if you like?—I dispute the accuracy of the inference that the cost of management of the company has been unduly increased in consequence of its prosperity.

25,873. Do you dispute the figures that have been put in?—No.

25,874. The figures are right, are they?—The figures are substantially right.

25,875. The figures put in by Mr. Haward, at Question 2621, show a gradual decrease in the cost of management at any rate from 1891?—Yes, from 1892. The highest amount was in 1878. It is less now than it was in 1872.

25,876. You began paying your back dividends in—what year was it?—In 1887 we paid the last back dividend that we have paid.

25,877. You finished paying the back dividends in 1887?—Yes.

25,878. There is a slight rise for two or three years after that, and then a fall in the cost of management?—Nothing material.

(Mr. Pember.) And they have fallen to very near what they were in 1872.

25,879. (Chairman.) I forget whether you are charged with an increase of cost in maintenance?—Yes, and I have prepared a special table about that.

(Mr. Pember.) As a matter of fact, during those later years you have got to consider that we are paying, not merely the 10 per cent., but what is equivalent to 12½, because we are giving those rebates or reductions or whatever they should be properly called, and the consequence is you must therefore compare the rise or fall in the cost of management, not with 10 per cent., but with 12½. That makes the divergence between the fact and the inference that Mr. Haward tried to draw all the more glaring.

(Mr. Balfour Browne.) After all, that is argument which you can address to the Commission afterwards.

(Mr. Pember.) Only I want to spare myself as much as I can.

(Mr. Balfour Browne.) It is entirely wrong. I do not like to comment on it just now. I will do it when I come to my speech.

(Chairman.) Will you refer first to Mr. Haward's table, it is a pity to have two tables if you agree with the figures.

(Mr. Mellor.) A great pity.

(Witness.) Which table does your Lordship refer to?

25,880. (Chairman.) The table in which he showed the cost of the increase in the management of your Company?—I have prepared a table analysing the charges for maintenance for the last 26 years.

(The Witness handed in Table. See Appendix W, 2.)

25,881. Do you dispute the figures in Mr. Gomme's table, handed in at Question 3510?—I do not dispute the figures, but I dispute the inference he draws from them.

25,882. The inference appears from the figures. Mr. Gomme pointed out that the expenditure and maintenance went up considerably immediately after the year 1886-7, when you could divide nothing more. Mr. Gomme's table shows that after 1886-7 there is a considerable annual increase in the maintenance?—Yes, and this table which I have prepared and which is now before you will show you the cause.

25,883. Do let us first get the facts: is there that annual increase in the maintenance?—Yes.

25,884. How do you explain it? Do it by word of month, and do not perplex us with a table?—It is on account of a special expenditure for various purposes which is explained in the right hand column. The expenditure in 1886, you will see, was 53,000*l.* and in 1887 it was 66,000*l.* That is explained by an increase of over 11,000*l.* in the item of filtration.

25,885. Why did you not begin spending on filtration two years or a year before? Why did you begin just that year?—Because it was reported that it was necessary to be done then. The work was not done before it was required.

25,886. Do you mean that those new necessities suddenly sprung up when you had reached your maximum dividends and had paid your back dividends?—Yes.

25,887. (Sir John Dorington.) Is there any relation between the two events?—No, I do not think there is.

25,888. Do they depend upon one another?—The Commission will remember that immediately after the payments on account of back dividends had ceased the rebate was allowed to the consumers; it took the place of the payment of back dividends.

25,889. (Chairman.) Yes, but they got all the less rebate because you began reconstructing filter beds and making all those items of outlay?—It was reported to the board that those works were necessary to keep the works in good order and they were done, and as they were chargeable to revenue, they were paid out of maintenance.

25,890. What we want you to do is to explain the coincidence of large amounts having to be expended upon maintenance just when you had reached the point where you could give nothing more to your shareholders.

(Mr. Pember.) I think it is coincidence, my Lord.

(Witness.) I do not think I can say anything more than that it was a coincidence. The work was not done before it was required, but it was done when it was required.

25,891. (Chairman.) Was there no reconstruction of filter beds and no buying of boilers in all those previous years?—Not for many years before, certainly.

(Mr. De Bock Porter.) Was there no exceptional expenditure between 1879 and 1886, while there has been continuous expenditure of this character since?

(Mr. Pember.) The filtering dropped directly, you see.

(Witness.) There does not seem to have been any exceptional expenditure.

(Mr. Pember.) Will you kindly note that those two items for filtration in the years 1887 and 1888 are excessive, not only in comparison with the years that have gone before, but in comparison with those that come after.

(Witness.) I have explained that.

(Mr. Pember.) No. You have not; that is exactly what the noble Lord does not see.

(Witness.) Of course that is an item that will not occur again for a great many years.

(Mr. Pember.) Then why do you not point it out?

(*Chairman.*) I see that in 1887 you spent 13,781*l.* on filtration, in 1888 11,381*l.*, and that in the next year that drops to 5,031*l.*

(*Mr. Pember.*) Then it drops to a low point—quite as low as ever it was before.

(*Witness.*) That re-construction of filter beds cost 21,000*l.*, and that was spread over two years.

25,892. (*Mr. De Bock Porter.*) In this table that you have put in from 1879 to 1887, there is no exceptional expenditure whatever; it is left blank; but every subsequent year there has been some exceptional expenditure?—Yes, that is so.

25,893. Did no expenditure of that character take place in those years?—No.

(*Sir John Dorington.*) In 1877 and 1878 there was a large increase of engine house and boilers.

(*Mr. Pember.*) Lowering the conduits 6000*l.*

(*Witness.*) All the works had been put into thorough order.

25,894. (*Mr. Mellor.*) I see there is a Worthington engine at Hampton, 6,000*l.* odd in the margin. Do you see that?—Yes; that was to replace the old engine, and so it was charged to revenue.

25,895. What was the size of it?—I cannot tell you. The engineer will be able to tell you that. It is a very powerful engine, I know.

25,896. (*Mr. Lewis.*) Are you quite sure that you had no exceptional expenditure of this kind between 1878 and 1886, but in consequence of the statement made by Mr. Gomme, drawing attention to the increase of the expenditure from 1887 to 1895, then you begin to show what exceptional expenditure you had incurred in order to account for that; are you quite sure there was no exceptional expenditure between 1879 and 1886?—I have given you the total expenditure in each year, and you see in the total column the amounts. The other columns show you how that increase has been incurred.

25,897. Your heavy additional expenditure really has been rates and taxes?—That is what I was going to say. There was no additional expenditure during the other years.

25,898. (*Mr. De Bock Porter.*) But, still, during those years between 1879 and 1886. The rates appear to have gone up from 8,478*l.* to 16,908*l.*, but there is no note at the side of any exceptional claim?—I cannot explain why the rates go up. They always are going up.

(*Chairman.*) It is the nature of rates to go up, is it not?

25,899. (*Sir George Bruce.*) The average daily supply had increased very much—from 9,861,000 gallons in 1878 to 15,035,000 gallons in 1887?—Yes.

25,900. That would rather suggest increased works would it not?—You will notice that the gross rental has also increased.

25,901. The increase of average daily supply would naturally suggest an increase of works, engines, filters, and so forth?—It does naturally.

25,902. (*Chairman.*) You have not put any extra works in your margin for all those years?—I misunderstood the question. There were no extra works, or if there were extra works they were new works paid out of capital. These are all expenses that are paid out of maintenance or revenue. But there were new works being constructed all this time.

25,903. Was that Worthington engine at Hampton a new engine?—It was a new engine to replace an old one.

25,904. And the boilers also new for old?—All these works that are described in the margin were works to replace the old ones, or else they would have been charged to capital.

25,905. (*Mr. De Bock Porter.*) Was there no restoration of boilers or expenditure of that kind between 1872 and 1887?—No. The life of a boiler is a long one. I think this is the first time they have been replaced for I should be afraid to say how many years. The engineer will give you that information.

25,906. A number seem to have got old together?—The old boilers in the works were gradually replaced by steel boilers.

25,907. (*Mr. Mellor.*) And the old engines also?—The engineer recommended them as better and more economical in working.

25,908. (*Chairman.*) These recommendations of the engineer by some odd coincidence all happened when there was nothing more to divide?—It did happen coincidentally, but there is also another thing, that we commenced to give constant supply in 1887, and therefore it necessitated the works being renewed to some extent.

(*Mr. Pember.*) It is the decade, my Lord, after all, when modern ideas have had more sway in this as in other matters.

25,909. (*Mr. Lewis.*) I notice that the increase in your expenditure between 1887 and 1897 is really not much larger than the increase between 1877 and 1887, there is not very much difference?—That is so.

25,910. Showing that this additional expenditure must have been going on in some form or another for a very long period?—There has been a gradual increase in the expenditure.

25,911. But then in the margin here, you tell us how you account for the large increase to which attention was drawn by Mr. Gomme—that is how I read it?—In the years where I have put these explanatory notes there has been a larger increase than usual.

25,912. Not very much larger?—Of course, the tendency right away from 1872 has been for an increased expenditure. If you will kindly notice the increase in the gross rental, you will see that in 1872 it was 130,000*l.* and in 1897 it was 269,000*l.*

25,913. Did other companies introduce the steel boilers about the same time that the West Middlesex did?—I believe some of them did, but I cannot speak for them. The water supplied has risen from 9 million gallons to over 20 million gallons, and, of course, that needs a great deal more expenditure. I have prepared a short table—I do not know whether you would like to have it—showing an analysis of the increase in certain maintenance charges to which attention was drawn by Mr. Gomme.

(*The Witness handed in Table. See Appendix W, 3.*)

25,914. What do you wish to draw attention to in this table?—Mr. Gomme drew attention to the great increase of charges in those ten years. There was an increase of 14,000*l.* In the margin there I have explained how the bulk of that increase is made up. In the storage of water there is an increase of 630*l.*, and out of that 221*l.* is the increased charge for wages. The rate of wages has increased, and as the works increase more men have to be employed. Then on the distribution of water, that is keeping the pipes, service reservoirs, and all that in order, there is an increase of 4,000*l.*, including increased charges for wages, amounting to over 2,000*l.* Among other items over which the company has no control there has been a larger increase. There was an increase of 10,905*l.* on rates and taxes; of 2,582*l.* payable to the Thames Conservancy, and of 1,926*l.* for rent. Those three figures show an increase of 15,000*l.*

25,915. What do you pay rents for?—The company take houses in different parts of their district for the turncocks to live in, so that they may be accessible in case of fire.

25,916. Rents have gone up, have they, in your district?—We have more stations as the work increases. I do not know that the rents have gone up.

25,917. Another charge made against you was that you had issued debenture stock at par, instead of issuing it at a premium; that debenture stock was issued under an Act, the West Middlesex Act—passed on the 13th May, 1869—I believe?—Yes.

25,918. Was that after the Companies Clauses Act of 1869 had passed?—Yes.

25,919. Did that Act repeal the provisions of the Companies Clauses Act of 1863, which prescribed that the interest on debenture stock should not exceed 4 per cent.?—Yes.

25,920. So that you might have issued your debenture stock at a much higher interest than 4 per cent. if you had thought fit?—Yes, and also it might have been issued as ordinary stock, in which case a dividend could have been paid amounting to 11,000*l.* a year more than the interest on the debenture stock.

25,921. Do you claim that your company had the express sanction of Parliament for issuing the debenture stock in the way that you did issue it?—Certainly.

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Mr. F. H. Wybroo. 25,922. And that you might have issued it at a much higher rate of interest, and might have obtained the same amount of money as share capital?—Yes.

14 Feb. '99 25,923. (*Mr. Mellor.*) If you had obtained it as share capital, had you the auction clauses?—No.

(*Mr. Pember.*) They were unknown then.

25,924. (*Sir John Dorington.*) If you had obtained it as share capital, it would have cost the public 11,000*l.* a year more?—Yes.

25,925. (*Mr. Lewis.*) You could have allotted it among your existing shareholders, I suppose?—Yes, but that was not done.

25,926. (*Chairman.*) I do not think there is anything more to say about that debenture stock issue. *Mr. Haward* quoted a report of the Local Government Board of 1891-2, at Question 2285, which refers, among other things, to the fact that you raised money on debentures for the purpose of works, instead of applying the balance of your capital account and your bankers' balance to that purpose?—There is no balance on the capital account.

(*Mr. Pember.*) It is a reserve of profit undistributed.

(*Witness.*) There is a balance on the revenue account. I beg your pardon, there was a credit balance on the capital account of 6,000*l.*

25,927. (*Chairman.*) At September, 1891, the balance on capital account stood at 52,242*l.*?—That was after the issue of stock.

(*Mr. Pember.*) That is with the increase. The sum that really they are talking about is a sum of 89,000*l.*, which was on deposit and which was undistributed.

25,928. (*Chairman.*) There was 6,000*l.* credited to capital account, a reserve of undistributed profit of 20,000*l.* and a repairs and renewals fund of 89,000*l.* on deposit at the bankers?—Yes.

25,929. It was suggested that there was a ground of complaint against your company, in that they did not devote that sum to these new works instead of borrowing money on debentures; what have you to say to that—had you power?—We had then no power to spend money on capital works out of revenue.

25,930. When did you get that power?—We had power by the Act of 1869 to raise money for capital purposes.

25,931. When did you get power to spend revenue on capital works?—Not till 1894.

(*Mr. Balfour Browne.*) That clause in the Act of 1894 was put upon them on the opposition of the County Council.

25,932. (*Chairman.*) Do you agree to that?—I think that hardly represents a fair statement.

25,933. Was the clause enabling you to spend revenue on capital works in your own original Bill?—No.

25,934. Who put it in—the Committee, I suppose?—The Committee put it in.

(*Chairman.*) Who suggested it?

(*Mr. Pember.*) I believe I did.

(*Witness.*) The company did.

(*Mr. Pember.*) I believe I did first.

(*Mr. Balfour Browne.*) It was on the opposition, at any rate, of the London County Council.

(*Chairman.*) The London County Council were opposing everything, I suppose—they were opposing the whole Bill—preamble and all.

(*Witness.*) At any rate, the company were quite willing to apply that sum to capital, and they were allowed to apply 60,000*l.* to capital works, and the balance to increase their reserve fund.

(*Mr. Pember.*) There is no concealment about it, and there is no mystery about it, but what it has got to do with this inquiry I cannot think, but still as a matter of fact we had a certain amount of money, whether it was 60,000*l.*, 70,000*l.*, or 80,000*l.*, it does not at all matter, but we had that sum of money standing by.

(*Chairman.*) I daresay I am wrong, but it is bearing upon this inquiry. I understand the view of the County Council to be this—they contend that when you come to consider the financial expediency of purchase, you must bear in mind that we shall claim to re-open both the capital and the revenue accounts of this company, and to say that they ought to get less than their

apparent income would otherwise entitle them to by reason of these transactions in the past.

(*Mr. Pember.*) I should say, yes, to that if it had not been that this very transaction has been considered by Parliament in 1894, and a settlement arrived at by Parliament as to how much shall go to capital and how much shall not, in a clause which I myself suggested, namely, that you should take the sum of money, whatever it was, and, I think, divide it into two parts, putting one to the reserve fund, and the rest to capital purposes. The clause is Clause 16 and it is: "Before creating any debenture stock under the powers of this Act the company shall apply to the purposes of the works by this Act authorised the sum of 52,500*l.*, being part of the sum of 107,000*l.*"—that is what the figure was with a certain number of shillings and pence—"shown by the last half-yearly accounts of the company to have been accumulated out of profits after paying the maximum authorised dividend, and it shall also apply to the like purposes the sum of 7,500*l.*, standing to the credit of the repairs and renewals fund, and notwithstanding anything contained in section 8 of their Act of 1852, the company shall be entitled to set aside the balance of the said accumulated fund to augment the reserve fund of the company." Now I proposed that clause, unless my memory is very bad.

(*Mr. Balfour Browne.*) Unfortunately I find that you absolutely opposed that clause.

(*Mr. Pember.*) I do not think I did.

(*Mr. Balfour Browne.*) I am reading from what the chairman said—"You do not oppose the clause, Mr. Pember"? (*Mr. Pember.*) Certainly I oppose the clause sir."

(*Mr. Pember.*) What clause? It was not this clause.

(*Mr. Balfour Browne.*) It was that clause.

(*Mr. Pember.*) It was not.

(*Mr. Balfour Browne.*) I assure you it was. It was in *Mr. Cripps's* examination. Let me say that I do not propose to do what your Lordship has said, namely rip up the accounts after a thing has been settled by Parliament; I think that I could not go into them.

(*Chairman.*) Then what was the meaning of *Mr. Gomme's* evidence before us?

(*Mr. Balfour Browne.*) I think it had this meaning—that the company tried to carry on undivided balances to the detriment of consumers, and Parliament had to intervene, and you say, you must bring back 60,000*l.* of that, and spend that on capital account for the benefit of the consumers—although this company wanted to practically spend it all out of capital. That illustrates the position the company has taken up all through. *Mr. Boulnois* told you yesterday that the consumers would have been just as well off in the hands of a company as in the hands of a corporation, but that could not have been done if it were in the hands of the County Council.

(*Mr. Pember.*) I do not say what would have occurred. All I say is that is settled by Parliament, and *Mr. Balfour Browne* now admits that.

(*Mr. Balfour Browne.*) I never said it was not. It was settled against your wishes.

(*Mr. Pember.*) No, it was not.

(*Mr. Balfour Browne.*) Indeed it was.

(*Mr. Pember.*) That was not the clause I opposed.

(*Mr. Balfour Browne.*) I beg your pardon, I have read the clause.

(*Mr. Pember.*) And I have read the clause too. It was a compromise. As a matter of fact, these balances had accrued by little and little year after year—by dribbles. They were no good to us at all; we did not know what to do with them; we could not have spent them upon capital works; there would have been a prodigious row if we had, and we really did not know what to do with them. There they remained, and if you ask me, I think I may venture to say, that on that particular occasion Parliament may be considered as having come to the assistance of the company quite as much as to anybody else's assistance in enabling them to deal with it in the way that it did.

(*Sir John Dorington.*) Are we to understand that a company having a large balance may take a vote of its shareholders to apply that balance to capital account if they please.

Mr. Pember.) No, I think not.

Witness.) They cannot do that.

(Mr. Pember.) Certainly not. If they did, you will see they would be increasing their capital account out of the pockets from year to year of the consumers really; and that is what is always fought against most vigorously in the case of water companies and gas companies.

(Chairman.) This 60,000*l.* that you were allowed to spend upon capital works did not thereafter become a dividend-earning sum.

(Mr. Pember.) No, certainly not. That is the point.

(Witness.) No, it did not.

25,935. *(Chairman.)* What harm is done to the consumer if you spend your revenue on capital works?—We cannot spend more on capital purposes than the amount authorised by Parliament.

(Mr. Balfour Browne.) A company that is paying its maximum dividend could not, but a company not up to its maximum could spend any amount of divisible profit upon capital purposes without the assent of Parliament.

(Chairman.) I should not have thought it possible.

(Witness.) The official auditor, I am sure, would object if we paid for capital works out of revenue; in fact he only recently raised the question.

(Mr. Pember.) I am quite sure it would not be allowed; it never is allowed.

(Witness.) In that report of Mr. Stoneham he objected to the New River Company paying for capital works out of revenue.

(Mr. Pember.) It is always objected to.

(Sir John Dorington.) The point was apparently that you raised 49,650*l.* on debentures, being new stock altogether brought into account; having at that moment 60,000*l.* or 53,000*l.* standing to the credit of your revenue account.

(Mr. Pember.) Not 53,000*l.*

(Sir John Dorington.) You had 89,000*l.* deposited with the bankers of the company.

(Mr. Pember.) Yes, that is what I said to start with.

25,936. *(Sir John Dorington.)* Having 89,000*l.*, they raised 49,000*l.* at 4½ per cent., and left the 89,000*l.* still on deposit?—Yes, because the 89,000*l.* was the balance of the revenue account.

25,937. That I quite understand?—Which it was not legal for us to spend on capital works.

25,938. That is to say, the shareholders could not empower you by a vote to apply that sum which was lying idle—to use that as part of the authorised capital?—No. It is only quite recently that the official auditor has expressed the opinion to me that we ought not to pay for any expenditure on capital works except out of money raised in the manner prescribed by Parliament.

(Mr. Pember.) That is the law.

25,939. *(Chairman.)* Who in the world would be injured if you spent the balance at your bankers in capital works?—That I cannot answer, I quite agree that nobody would be injured, but it is not the strictly legal way.

(Mr. Balfour Browne.) This money might already have gone to the reduction of rates, but they accumulated it and kept it away from the reduction of rates.

(Witness.) I dispute that.

(Mr. Balfour Browne.) They had no right to have a balance at all.

(Witness.) I dispute that. This balance of revenue had been the growth of a great many years—two or three thousand pounds per annum, or some small amount like that, not sufficiently large to make a rebate, as we have since been able to do. We had not sufficient at that time to allow the consumers even 5 per cent., not a surplus revenue of 10,000*l.* a year.

25,940. *(Sir John Dorington.)* How is this rebate that you are making now shown on the demand notes? Is it a lessened charge on the demand note, or is it an original charge on the demand note with an amount subtracted from it?—The authorised amount is shown less a rebate of so much—10 per cent.

25,941. *(Mr. Mellor.)* Is it called a rebate on the demand note?—Yes. *Mr. F. H. Wybroo.*

(Mr. Pember.) We have handed in a copy of our demand notes, I think. Here it is:—"Application made for the payment of two quarters' water rate, amounting to (blank), less rebate at the rate of 10 per cent. Amount payable (blank)."

25,942. *(Chairman.)* Now as to the revision of your capital in 1852. Did you claim that the West Middlesex capital amounted to 830,000*l.*?—Yes. See 2816-27.

25,943. Did Parliament fix the amount of your capital at 506,300*l.*?—Yes. May I explain why that was done.

25,944. One moment. I will ask you some questions first, because I think I can do it shorter. Was the amount that had been paid up by your shareholders in respect of the nominal capital, 395,450*l.*?—Yes.

25,945. And had you then expended out of income in respect of capital outlay 111,247*l.*?—Yes.

25,946. Making a total of 506,697*l.*?—Yes.

25,947. At that time, then, you had power to spend your income in capital outlay?—It was done.

25,948. And Parliament sanctioned its being done?—They did.

25,949. Why did they lop off the difference between 506,697*l.* and the 830,000*l.* that you claimed?—It was proved that, although some of the capital of the company was raised at par and the shares fully paid up, other capital issued at the time of the wars at the beginning of the century, when public credit was very low, had been raised at no less than 70 per cent. discount.

25,950. You have given me the exact amount that the shareholders had paid up, and that was allowed you as capital?—Yes.

25,951. My question to you now is why they did not allow the full 830,000*l.* that you claimed; how did you make that up? You say you got allowed 506,300*l.* of capital, and you claimed 830,000*l.*?—The authorised capital of the company at the time was only 400,000*l.*, but to get the 400,000*l.* the company issued 8,300 10*l.* shares, for which they only got 396,000*l.*

25,952. You now get a different figure—it is well to stick to the right figure; you mean 395,450*l.*?—Yes. I beg your pardon.

25,953. It is so confusing to get a different figure in every answer, you know. You claimed the nominal amount of your shares, is that it?—Yes, that was claimed at that time.

25,954. You got allowed what had actually been received for the shares?—Yes.

(Mr. Pember.) Do you mind my reading to you the recital of the Act of 1852, which puts it as clean as a whistle:—"And whereas the total amount of money which the company were by the recited Acts authorised to raise by shares is 400,000*l.*, and whereas for about thirteen years after the first recited Act the company did not derive any profit from their undertakings, and they raised 395,450*l.* 12*s.* 1*d.*, being part of that 400,000*l.*, and in order to raise that amount—the "and" ought to have been "but"—"but in order to raise that amount they issued 8,300 shares of the nominal amount of 100*l.* each"—which, of course, works out at 830,000*l.*, the greater part of those shares being issued at a considerable discount. They do not state what the discount is, but, as a matter of fact, the discount was large.

(Chairman.) When you interpose observations of your own in reading a text, which we hear for the first time, it is extremely difficult to follow.

(Mr. Pember.) I beg your pardon. I have read all I wanted to read. They interpret, in fact, their power to get 400,000*l.* to mean to get it in any way they could; at the moment the only way they could get it was by issuing shares at such a discount that, instead of 400,000 nominal shares representing 400,000*l.* worth of capital, they had to issue shares to the nominal value of 830,000*l.* Parliament would not stand that, and knocked it off, and made the nominal amount 400,000*l.*

(Chairman.) I do not pretend to remember everything that has been told us of this transaction, but I think I remember that something was said about its being arrears of interest that were claimed to be added to the capital.

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(Mr. Pember.) That is another company.

(Witness.) There was something of that said; but it does not refer to this company.

(Mr. Pember.) It was said that they tried to capitalise back dividends.

(Chairman.) That is the explanation that Parliament substituted; the real amount paid up for the nominal amount of the shares.

(Mr. Pember.) Exactly; that is it. In fact, that was the only amount we had power to raise. When you give a company power to raise 400,000*l.* in shares, you mean shares which represent nominally 400,000*l.*; you do not mean shares which nominally represent 800,000*l.* I can afford to say that, because this is 45 years ago, and nobody is alive who did it.

25,955. (Chairman.) The effect of that transaction was that Parliament allowed you the amount really paid up by your shareholders on their shares, and it also allowed you what had been expended out of revenue for capital works?—Yes.

(Mr. Pember.) In fact, it allowed what really had been spent.

25,956. (Chairman.) Does that Act of 1852 contain any words or any clauses negating the idea of a further revision of that capital—is the capital so authorised by that Act of 1852 entitled to the 10 per cent. for ever?—I think so, because in that Act of 1852 the Waterworks Clauses Act of 1847 is incorporated, which allows a dividend of 10 per cent. to be divided on the paid-up capital.

25,957. There is no clause and no words pointing to a possible future revision of that capital?—No.

(Mr. Pember.) On the contrary, if you come to read the Act of 1871, you will find it distinctly limits the power of the auditor to see that no improper amounts were charged to capital; but even that power of his does not go farther back than the year 1864.

25,958. (Mr. Lewis.) Is the question of back dividends dealt with in the same Act—the Act of 1852?—There is no question of back dividends.

25,959. Why do you not go back to the Act of 1847 for your back dividends?—The Act of 1847 was only incorporated in 1852; and it is a question whether we could go further back than 1852.

(Mr. Lewis.) But still you had the benefit of the General Act—the 1847 Act?

(Chairman.) But only since 1852.

(Witness.) Yes, but it was not incorporated in the Company's Act till 1852; and it is a legal question which has not, I believe, yet been settled.

(Mr. Pember.) There is a question whether the honourable gentleman is not right, and whether you cannot go back to 1847. Some persons have held that the Act only speaks and operates from the date of its incorporation. I do not know that some of us are not inclined to agree to that. I do not want to give anybody away, but I believe, as a matter of fact, that people are prepared to argue that even the date of 1847 is no limit to the claim of back dividends, and that you may go back to the incorporation of the company. The West Middlesex have never formally abandoned that claim; but they have not, as you see, acted upon it.

(Chairman.) You cannot have a claim to back dividends until the amount of dividend is fixed.

(Witness.) That is a legal question which I cannot answer.

(Mr. Pember.) I do not make any statement; please understand me, my Lord.

25,960. (Chairman.) It was that Act of 1852 that changed your power of charge from a charge by agreement to a charge by rate, was it not?—Yes.

25,961. It was also that Act that relieved you from compulsory competition with other companies?—Yes.

25,962. But that Act also empowered you to remove your intake from Hammersmith to Hampton?—Yes, and authorised an increase of capital for that and other purposes.

25,963. In that same Act, by which Parliament fixed your capital at this sum of 506,000*l.* odd, they contemplated your Hammersmith intake becoming obsolete and useless?—Yes. I might explain that the Hammersmith works never became obsolete. The pumping station of the company is still at Hammer-

smith and the intake only was removed from Hammersmith up to Hampton.

25,964. So far your intake at Hammersmith became useless?—Yes, but the intake was a very small matter.

25,965. You wrote off nothing for depreciation?—No.

25,966. I suppose you justify that on the ground that you debit all renewals to revenue?—Yes.

25,967. And on the other hand you credit yourself with nothing for appreciation of land or works?—That is so.

25,968. Have you once been taken before the magistrates about the charges for public purposes—for street watering and flushing sewers?—Yes. In 1888 the Paddington Vestry applied to the magistrates to fix the rate.

25,969. What rate were you charging at that time?—It was 9*d.* per 1000 gallons.

25,970. What rate did the magistrate fix?—8½*d.*

25,971. Is that rate subject to a rebate as well as the rest of the charge to the consumer?—Yes, the rebate is allowed on every account.

25,972. I believe the New River Company got from another magistrate power to charge a shilling per 1000 gallons?—Yes.

25,973. That was at an earlier date?—Yes, in 1872—and there have been other cases.

25,974. The vestries can go from time to time to the magistrates, can they not?—At any time they like.

25,975. I mean, if from any reason 8½*d.* was too high a charge they could go and get it reduced now?—Yes. There has been a very recent case in one of the companies' districts where they applied and the magistrates lowered it still further.

25,976. Against you?—No, against another company.

25,977. (Sir John Dorington.) What is the guiding principle of that charge when it comes to a legal decision?—I can hardly tell you on what grounds the magistrate gives his decision.

(Mr. Claude Baggallay.) I had to argue that case on one side just before Christmas before the magistrate who made the last revision, and I am afraid I should be unable to say what the guiding principle of his decision was.

(Mr. Pember.) I suppose he finds as an arbitrator not as a lawyer.

(Mr. Claude Baggallay.) No, he gave reasons, but it is very difficult to comprehend them, and I am not going to attempt it.

25,978. (Mr. Lewis.) Is the decision of one magistrate respected by another magistrate?—I cannot answer that question.

(Mr. Claude Baggallay.) To a certain extent they have been. I can tell you exactly what took place. First there was a case in 1872, the New River case, when 1*s.* was fixed; then there was a case in 1883, when at the Lambeth Police Court the 8½*d.* was fixed; then there was a case a few years later—in 1888; I think it was a West Middlesex or Grand Junction case in St. Pancras or Paddington, where the magistrate on different grounds took the same figure as the Lambeth magistrate had taken in 1883. After that I may say nearly all the companies accepted the figure which had been decided by those two magistrates to be a right figure without going before the magistrate or fighting the question out; and the New River voluntarily came down, I think, in all cases, and accepted the 8½*d.* which has been subsequently settled in those cases. Then this last year the Lambeth Vestry took the Southwark and Vauxhall Company again before the Lambeth magistrate, and he further reduced the figure, but there has been no other case to know whether that will be followed.

(Mr. Freeman.) He reduced it to 6*d.*

(Mr. De Bock Porter.) The companies have not accepted the last decision, have they?

(Mr. Claude Baggallay.) I do not know whether you can say they have or have not. I do not know what course they may take. It was only just about a fortnight ago that the judgment was delivered.

(Mr. Lewis.) The companies have an appeal against the decision, I suppose?

(*Witness.*) No; there is no appeal in the particular parish.

(*Mr. Pember.*) I am told there is not.

(*Mr. Claude Baggallay.*) I do not think it is wise to say there is no appeal. They may or may not be, but of course, one will have to find something very wrong in order to get an appeal, because, according to the form of the clause under which they act in the Waterworks Clauses Act; *prima facie* it is a final decision.

(*Mr. Freeman.*) I believe, as a matter of fact, the magistrate was asked to state a case and refused. He reduced it to 6d. and refused to state a case.

(*Chairman.*) He would be bound to state a case on a point of law, but there was no point of law, you see.

(*Mr. Freeman.*) He found as on a point of fact.

(*Sir John Dorington.*) What do you prove in such a case? Do you prove the cost of water in the mains and then ask a reasonable profit on it?

(*Witness.*) It is the cost of pumping, and in some cases of providing a larger main for the sake of giving a supply. You see the supply for street-watering is required in the summer when the demand for water for other supplies is greatest, and only at certain hours in the day. The companies contend there should be a higher charge paid for street-watering than the ordinary meter charges, where the water is delivered into storage cisterns or large tanks which can be filled up at night. Special pressure is required for this water, and it is used at the busiest time of the year and of the day.

25,979. And that is the case which is put before the magistrate on which he has got to form a judgment?—That is the case. I do not know the particulars of the last case, but I have no doubt it was put so before the magistrate.

25,980. (*Major-General Scott.*) The whole quantity used for street-watering is very insignificant, is it not, compared with the general supply of the company?—Yes, of course it is only a very small part.

25,981. (*Mr. Pember.*) Have you any idea what it is?—We get about 5,000*l.* a year for it, out of 260,000*l.*, that is about a fiftieth part.

25,982. And yours is at 8½*d.*?—Yes.

25,983. (*Chairman.*) You are one of the partners of the Staines Reservoirs Scheme?—Yes, the West Middlesex is.

25,984. And you are now, are you not, providing the storage which that scheme renders necessary?—Yes.

25,985. Have you done anything towards providing additional storage for your normal supply, as I may so call it, of 24½ million gallons a day from the Thames?—Not on the same scale that the Staines Scheme is.

25,986. You have done nothing to bring the storage for your ordinary supply—for your original power of take—up to the conditions that Lord Balfour's Commission pointed out?—Yes, since Lord Balfour's Commission, and since we got the capital powers under the Act of 1894, we have constructed four large special reservoirs at Barnes holding 350 million gallons, so that we have now 20 days' storage on our average supply.

25,987. That has been done since Lord Balfour's Commission, I see?—Yes.

25,988. About your charges, I do not think I need ask you any question; we have got abundance of tables put in. Your charges are lower than those of the 19 towns mentioned in Mr. Hawksley's table?—Yes.

25,989. Did you increase your rates or charges in 1852?—Not to old tenants, or unless there was an alteration in the supplies or the premises, until the decision in Dobbs's case in 1884 rendered necessary the revision of the rates.

25,990. Do you mean that you raised your rates after Dobbs's case?—We revised them all; but in some cases we lowered them, and in some cases we raised them.

25,991. In some cases you were charging on a sum less than the rateable value?—Yes, in a great many cases. Dobbs's case, you will remember, settled that the net annual value was to be taken.

25,992. (*Sir John Dorington.*) Was the net result of the Dobbs's decision favourable or unfavourable to your company?—It was favourable.

25,993. (*Chairman.*) That is, you were obliged to reduce some of your rates, but you screwed up all the others?—No, we did not screw them up.

25,994. I will not use the word "screw," because that is invidious, but you raised all the others up to the amount?—Yes, but we did not raise them as much as we could, because when Torrens's Act was passed, which said that the rateable value was to be the standard on which the water rate was to be charged, we had another revision, and that resulted in a further increase of the revenue.

25,995. Dobbs and Torrens, therefore, instead of being benefactors to the consumers, were benefactors to your company?—They were favourable to the West Middlesex Company.

25,996. (*Sir John Dorington.*) Your practice has been to keep a fixed charge on a house—the original charge was never varied, is that it?—That was the case from 1852 until these revisions.

25,997. Notwithstanding any increase of rateable value, you always kept the same price on a definite house?—Not since Torrens's Act was passed.

25,998. I mean before Torrens's Act?—Then we kept to the old rates that were charged in 1852, unless, as I have explained, there was a change of tenancy or an alteration in the premises or the supplies, and then we fixed what we considered a fair value for the premises, and we charged on that.

25,999. So yours was a very conservative income, then?—Yes, according to the table I have put in, it increased from year to year, owing to the new supplies, but we did not disturb the old charges until 1884.

26,000. And then the law made a new method of charge, in your opinion, compulsory, and you adopted that, and the result was a general increase?—That is so.

26,001. (*Mr. De Bock Porter.*) Is yours the only company that was benefited by the Dobbs's decision?—I think not.

26,002. (*Chairman.*) The Dobbs's case, I think, was in 1884?—1883 or 1884.

(*Chairman.*) I see your gross income jumped up 10,000*l.* then.

26,003. (*Mr. De Bock Porter.*) I see that that case did lead to a reduction in the income between 1887 and 1888 of from 143,000*l.* to 124,000*l.*?—I have explained that the rebate was allowed from Midsummer, 1887.

26,004. (*Chairman.*) To go to the system of supply by meter, what are the objections to that?—I think there is no meter in the market, except a very expensive one, which could be relied upon to measure accurately small quantities of water.

26,005. What do you mean by a very expensive one—what would it cost?—The average price of a meter now is between 3*l.* and 4*l.*, but I daresay if a meter had to be fixed for every house in London (and there are above 500,000 houses) the price of it would be reduced.

26,006. (*Sir John Dorington.*) What do you mean by small quantities of water—100 gallons?—No, when a jug of water is drawn off, or a pail of water, the ordinary meter would not register it.

(*Mr. Pember.*) It would have to be a very delicate instrument I suppose, and therefore very expensive.

26,007. (*Chairman.*) You say there are over 500,000 houses in the water companies' districts of supply?—Yes.

26,008. That would be a large sum then—3*l.* or 4*l.* apiece would be a million and a half?—Then, secondly, the charge would involve much increased expense.

26,009. That we have already had. You must fix one to every house?—Yes.

(*Mr. Pember.*) That is more for the establishment of the meters.

(*Witness.*) The cost of fixing the meter at every house in London would amount to more than a million pounds if placed outside; if placed inside, the cost would be less, but special legislation would be required. Then such a scale of charges would have to be fixed as would produce the present net income of the companies, and, in addition, a meter rent would have to be charged.

Mr. F. H. Wybros.

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Mr. F. H. Wybroo. (Chairman.) I cannot quite follow that, there is nothing absolutely sacred, that I know, about the present net income of the companies.

12 Feb. '99 (Mr. Pember.) I hope the 10 per cent. is in the canon.

(Witness.) They have their present incomes assured them under the present rates, and, I suppose, they would be given a scale for meter charges to bring them in about the same income.

(Mr. Pember.) What about the staff?

26,010. (Chairman.) You would require a large staff, I suppose, of meter readers and collectors?—Yes.

26,011. Why should you collect oftener under the meter system than under the present system?—There would be so many disputes if the meter accounts were to be allowed to run for half a year.

26,012. Why should there be more disputes at the end of six months than at the end of three—

(Mr. Pember.) Because the readings would have to be taken in the meantime.

(Witness.) They would say the meter had been out of order. The meters have to be checked very often, and, of course, the closer the time the easier any defect is remedied.

(Mr. Pember.) For that reason, my Lord, it is worth while, perhaps, to mention that the collection for gas and electric lighting is always made quarterly. The meters have to be watched.

26,013. (Chairman.) What effect would the meter system have upon the lower rated houses; would they pay more or less than now?—I think the lower rated houses would have to pay much more than they do now to the relief of those in the higher-rated houses, and, as I have explained, an increased aggregate amount would have to be collected to pay the increased expenses.

26,014. You say you only get 8½d. per thousand gallons for the water supplied for public purposes. Supposing you only got 8d. per thousand gallons for the domestic supply, would that produce your 10 per cent.?—No; we should want a much higher charge than that.

26,015. If the undertakings of the companies were in the hands of a public authority, why should not the rate collectors collect the water charges?—I daresay they could do the actual collection of the money, but the accounts for the water rates vary with every house almost owing to the difference in the supplies, and there is a great amount of labour in making out the applications for the rates.

26,016. Do you mean according as there are more or less water-closets or more or less baths?—Yes. The collectors, besides collecting the money, do a great deal of clerical work; they make out the forms of application with the details of the charges, and they make out their own collecting books. So I think, even if the actual work of collecting was done by the parish collectors, or any other collectors, a large staff would still be required to do some of the work that is now done by the company's collectors.

26,017. Then you think there would not be much saving in collection if the undertaking of the company were in the hands of a public authority?—I do not think there would be much saving.

26,018. (Sir John Dorington.) Would there be any objection to abolishing all these extra charges—high service, baths, w.c.'s—and compensating for that by an increased general charge?—It is a question where you would stop. If you made an inclusive charge of 4 per cent. on the rateable value, or 5, or 5½, or 6, would you allow a man to use as much water as he likes to do and to put any number of fountains, or anything he likes in his house? There must be extra charges for some things.

26,019. Fountains in the house could not amount to much, but fountains outside in the gardens would be different things?—Extra services on the premises I was thinking of, such as baths.

(Mr. Pember.) Anak and his five sons would use a lot of water in their baths.

26,020. (Chairman.) Your trade supplies are all by meters?—Yes.

26,021. What do you pay for those meters?—It varies according to the size. The small meters, as I say, range about 3l., but some of the large ones cost, I dare say, up to 20l.

26,022. You only have those meters examined, I suppose, once a quarter?—They are all read once a month and in some cases weekly.

26,023. What is the necessity for that?—Some of the meters only register a certain quantity, and unless they are read frequently, a revolution may have taken place.

(Mr. Pember.) They want winding up like a clock.

26,024. (Chairman.) I believe you have prepared a table showing the result of the quinquennial valuations as far as your company is concerned?—Yes.

(The witness handed in Table. See Appendix W, 4.)

26,025. You have only got the quinquennial revision of 1891, I see?—Yes; it is put in merely as a specimen of the effect of revision.

26,026. Your ordinary increases, not due to alterations and not due to new property, amount to 104,224l.?—Yes.

26,027. And the reductions amount to 91,870l.?—Yes.

26,028. That leaves a balance of 12,354l. to the benefit of the company?—Yes.

26,029. And upon that you get 4 per cent., I suppose?—Yes, roughly speaking.

26,030. Did your own rates increase in 1891?—The assessments were increased to the amount of 12,826l.

26,031. In that year?—Yes, at that revision.

26,032. What had your assessments been before 1891?—They were so much less.

26,033. You say the increase was over 12,000l.?—The increase was 12,826l.; and that meant an increase of actual rates that the company had to pay of over 3,000l. a year as against the gain of about 490l.

26,034. So that you have lost money, you say?—Yes, the quinquennial revision was no benefit to the company.

26,034a. (Mr. Pember.) That 490l. you got by taking the 4 per cent. on the 12,354l.—Yes.

26,035. Have you a return to put in giving particulars as to the works and supply of your company?—Yes.

(The Witness handed in Return. See Appendix W, 5.)

26,036. Have you also a return showing the distribution of the capital expenditure of the company?—Yes.

(The witness handed in Return. See Appendix W, 6.)

26,037. And a return showing the number of supplies, estimated population supplied, and the rateable value of properties supplied?—Yes.

(The Witness handed in Return. See Appendix W, 7.)

26,038. Will you also hand in a copy of your letters estimating the future capital expenditure of the company?—Yes.

(The witness handed in Estimates. See Appendix, W, 8.)

26,038a. I see that you estimate your capital expenditure up to 1937 at 12,500,000l.?—Yes.

(Mr. Balfour Browne.) That is exclusive of Staines, I suppose?

(Chairman.) Yes, it is exclusive of Staines.

26,039. (Mr. Pember.) Perhaps you would not mind either my asking him, or perhaps you would ask him, whether the preparation of that summary of the results of the quinquennial revision of 1891 did not entail a very large amount of labour. Some remark was made that he had only given that one revision. (To the witness.) It was a very laborious thing, I believe; was it not?—Yes, it took a great deal of labour and time.

(Chairman.) I do not find fault with it.

(Mr. Pember.) No; but I think that explains why there is only one.

Cross-examined by Mr. BALFOUR BROWNE.

26,040. I only want to clear up two points with regard to the capital. As I understand, in 1852 you sought to have your capital fixed at 830,000l.?—Yes.

26,041. It was found that some of your shares had been issued at a discount?—Yes.

26,042. I find in your own return, of 1821 I think it is—this is a West Middlesex return, and I will see where it comes from afterwards—"The capital joint stock of the West Middlesex Waterworks Company" is divided into 7,542 shares, all of the nominal value

"of 100l. each; of these shares 2,000l. were issued at the full sum of 100l. each; but the remainder were subscribed for at the depreciated value of 30l. each." I suppose that was true?—Yes.

26,043. Now, is it not the fact that the Committee in 1852 would not allow you to capitalise every 100l. at 100l., but wrote down every 100l. to 61l.—that is clause 6 of the Bill?—They reduced the total amount of the capital from 830,000l. to that 395,450l., adding on the amount that was spent out of revenue.

26,044. Let me read you what the Act says?—Might I answer?

26,045. Yes, certainly?—Adding on the amount that was spent out of revenue; that made 506,697l. They said they would fix the actual capital at 506,300l., and that, divided by 8,300, the number of shares, gave 61l. each.

26,046. Exactly, so that every 100l. was written down to a 61l. share?—Yes.

26,047. The words of the Act are:—"That the capital of the company shall be 506,300l. divided into 8,300 shares of 61l. each, and the nominal value of the existing shares in the company shall be reduced from 100l. each to 61l. each?"—That is what I have just said.

26,048. That is what the Act says. Now, with regard to the question of raising capital by debentures, I find in the report of Mr. Stoneham to the Local Government Board, the date of which is the 2nd June 1892, this:—"The accounts of the West Middlesex Water Company show that during the year ended 30th September 1891, the company created and issued additional debenture stock, bearing interest at 4½ per cent. per annum, to the extent of 50,150l.; of this amount 49,650l. was taken up. This stock at the time of issue would, if the auction clauses applied, have commanded a large premium in the open market, but the par value only was receivable, and has been brought to account. The circumstances under which this issue was made were peculiar, and are worthy of consideration. The accounts of the company for the half-year to 30th September 1890, show that after providing for all capital liabilities, there was a credit balance for the capital account of 6,071l. There was also a reserve of profit undistributed, after satisfying all claims for dividends (exclusive of a reserve fund of 20,000l. and a repair and renewal fund of 7,500l.) of about 89,000l. on deposit with the bankers of the company. The account for the half-year to 31st March 1891, shows the balance of the capital account had been increased to 53,705l. 10s. 7d., and the deposit with the bankers had also been increased from 89,000l. to 148,000l. On the 30th September 1891, the balance of capital account stood at 52,242l. 19s. 9d., after providing for all liabilities, and the bankers' deposit remained at 148,000l., the other funds being unaffected. It follows therefrom that the creation of the debenture stock in question was not at the time of issue necessary to meet expenditure incurred for the works of the undertaking. The effect is to charge the concern with interest on 49,650l. at 4½ per cent. at a time when the company were receiving for the same about 1 per cent. interest from their bankers. The allottees have received a perpetual debenture stock far in excess of the par value. I am not aware that any limitation exists as to the time when companies may create and issue new capital, but there can be no doubt that Parliament, when conferring powers on the company, intended they should be used with circumspection and ordinary prudence." That states the facts, I think, correctly, does it not?—You mean as to the figures? I know Mr. Stoneham reported that.

26,049. And you cannot vary it. The fact was that although you might have raised the capital in a cheaper method, that is to say, by the auction clauses, or putting a premium to the capital without charging any dividend, you distributed it amongst certain allottees at 4½ per cent., and that stock, of course, went above par immediately?—New stock was allotted at par.

(Chairman.) You might have added that they might have raised the capital at a much higher rate of interest or by shares.

26,050. (Mr. Balfour Browne.) True; that was always at the option of a waterworks company—they could always raise it in that way until quite recently. (To the witness.) It is the fact now, however, that since

Parliament found out that that was within your power, all recent capital has had to be raised by debentures?—It has to be raised by debentures.

(Mr. Balfour Browne.) I know, and by debentures at a limited dividend.

(Chairman.) You told me just now that you had power to raise it, if you pleased, by issuing shares or by debentures at a much higher rate of interest.

(Mr. Pember.) At that time.

(Witness.) So we had, my Lord, at that time. Mr. Balfour Browne is now speaking about subsequent issues.

26,051. (Mr. Balfour Browne.) More recently, as a fact, you have been limited, and you cannot either raise it by shares or debentures as you choose. All the Staines capital has to be raised by debentures at a limited interest?—Certainly, the capital authorised since is raised under different conditions.

26,052. At this particular date you had the money at your bankers, and were receiving 1 per cent. for it while you were distributing it to these gentlemen, the allottees, and giving them 4½ per cent.?—It has been so stated two or three times to the Commission.

26,053. Is it not a fact that in 1894, just when the Bill was being introduced, you had a balance on the dividend and interest account of 165,486l.—it is in your own accounts?—Before the dividend was paid?

26,054. Yes; and I find that Mr. Stoneham made this note on your accounts:—"I hereby certify that I have examined the foregoing accounts, and that they are correct. I further certify that the sum of 57,760l. 13s. 7d. is available for payment of dividend on a capital of 1,165,060l., and there is a further profit of 107,725l. 12s. 11d., in addition to the sum of 7,500l. to the credit of repairs and renewal fund account, in excess of the amount necessary to satisfy the claims of the company under section 76 of the Waterworks Clauses Act." Now you went to Parliament, and there was no clause enabling you in the Bill to apply that large balance which Mr. Stoneham found to any purposes at all?—No, that has been already explained to the Commission.

26,055. And on the opposition of the London County Council you were made to carry 60,000l. in all to capital account out of that reserve fund before you were enabled to raise anything by debentures?—I cannot quite agree with your way of putting it.

26,056. I will read the clause?—The company were very glad to apply the money in that way.

26,057. Here is the clause:—"Before creating any debenture stock under the powers of this Act, the company shall apply to the purposes of the works by this Act authorised the sum of 52,500l., being part of the sum of 107,725l. 12s. 11d. shown by the last half-year's account of the company to have been accumulated out of profits after paying the maximum authorised dividend, and shall also apply to the like purposes the sum of 7,500l. standing to the credit of repairs and renewals, and notwithstanding anything contained in section 8 of the West Middlesex Act, 1852." So that before you were enabled to raise anything and spend it out of debentures, the sum of 60,000l. had to be taken out of those accumulated balances?—Yes, the company were very glad to do it.

26,058. Is it not a fact that with that 107,000l. and 7,500l., you could if you had chosen have reduced the price of water?—No, I explained that to the Commission.

26,059. Why not? You explained to the Commission that it had accumulated gradually?—Yes.

26,060. But when you had that standing to your credit you could have reduced the price of water?—For one year only.

26,061. What is 10 per cent. upon your total?—You should remember that at that time we were making a rebate of 10 per cent.

26,062. There is no limit to the amount of rebate that you can make?—No. You mean we should have increased the rebate to, say, 20 per cent. for one year, and then have gone back to 10.

26,063. You could have returned that money to the consumers somehow, and you did not do it?—Of course not.

26,064. It never was yours to do anything with?—There was no obligation to do anything with it.

Mr. H. H.
Wybrow
14 Feb. '99

Mr F. H. Wybroo. 26,065. Are you aware that that transfer of that accumulated balance from your accounts to capital account saved the consumers of water 1,300*l.* a year?—
14 Feb. '99 The interest on 60,000*l.*

26,066. The interest on 60,000*l.*?—I daresay it would.

26,067. And but for that Act of Parliament it might have been standing on your accounts to this day, and you might have been getting 1 per cent. possibly from the bankers?—I cannot tell how things would have happened if they had been different, you know.

26,068. Of course, you know quite well—I do not want to go over the proceedings, I have already referred to them—that you opposed that clause in 1894—

(Mr. Pember.) I am sorry to say we did not; I have got the proceedings before me, and I will read them in re-examination.

(Witness.) I think I had better leave that to counsel.

(Chairman.) I should be extremely glad if I could be told what bearing this has.

(Mr. Pember.) So should I—but that is another thing.

(Mr. Balfour Browne.) I concluded it had some bearing because you went into it in chief.

(Chairman.) I told you what bearing I thought it had, but you told me I was wrong. I thought it had the bearing that this company's capital account was to be revised in view of their misdeeds in the past; if it has not that bearing, I really do not know what bearing it has.

(Mr. Balfour Browne.) My Lord, I think it shows that this company was at that date, not so long ago, 1894, wasting 1,300*l.* a year of the consumers' money.

(Chairman.) Supposing they were.

(Mr. Balfour Browne.) Supposing they were, they will do it again, my Lord, unless Parliament looks after them.

(Chairman.) I do not know.

26,069. (Mr. Balfour Browne to Witness.) Upon this table of the expense of maintenance I have not got much to ask. It is a fact, however, that the table speaks for itself; nothing was done practically between the years 1872 and 1886, and during the whole of that time you were making up arrears of dividends?—Between 1872 and 1886, no.

26,070. Between 1872 and 1886, with the exception of the two years which are shown in the margin, that is so—nothing?—You said we were making up arrears of dividend between 1872 and 1886.

26,071. You were paying back dividends?—Between 1872 and 1886?

26,072. Sometime between those, certainly?—You said for all those years, I thought.

26,073. In 1887 you could not pay anything more than your 10 per cent.—all your powers of paying back dividend were exhausted, and you at once began to spend on works?—Yes, but the rebate that was given to the consumer was more in extent than the amount that had been paid for the last year or two on back dividends.

26,074. Suppose your works had been kept up to a proper condition and these expenditures had not been necessary, the rebate, as you call it, to the consumers would have been larger?—Would you mind repeating the question?

26,075. If the works had been in perfect condition at the date when the back dividends ceased being paid and these expenditures had been unnecessary, the consumers would have got more?—Of course, if the money had not been spent.

26,076. So that every penny in this column from 1887 down to the present time has been paid out of the consumer's pocket?—No.

Re-examined by Mr. PEMBER.

26,077. Surely, on the assumption that you had not kept your works up, up to 1887, as well as you had—those sums instead of being spent in 1887 and subsequently would have had to be spent somewhere between 1872 and 1887?—Yes.

26,078. Would not that have retarded the moment at which you ceased to pay back dividends?—Certainly.

26,079. Then what difference would that be to the consumer?—I cannot see. These works were not done before, because they were not required before.

(Mr. Pember.) It may be, I am a little sensitive, my Lord, as to its being supposed that I made an inaccurate statement upon what I did upon former occasions, I did not oppose that clause which my learned friend has read, though I read it previously. In 1894 what I did oppose was a proposal on the part of the London County Council that no part of the 10,700*l.* should be left to the reserve fund, but should be all spent upon capital account instead. That is what I opposed. That was the clause that they proposed. They did not bring up a clause, I believe, absolutely, but that was their proposal.

(Chairman.) Who did bring up the clause that was passed?

(Mr. Pember.) I did.

(Mr. Freeman.) I brought it up myself.

(Mr. Pember.) My Lord shall judge. As to whose hand the paper came out of, I have got nothing to do with that, and I do not care twopence about that, but just let me read to you what I did say. Of course, I will cut it short.

(Chairman.) Please.

(Mr. Pember.) I pointed out that in 1852 we, not bothering ourselves much about the reserve fund, instead of taking the reserve fund of one-tenth of our capital, which the General Acts would have given us, were content to take a little sum of 20,000*l.* which happened to be our reserve fund up to that time. If we had contented ourselves with the general law, and not taken that, I pointed out that our reserve fund would have been one-tenth of the million and a quarter or thereabouts—120,000*l.* Therefore, I said it is a mere accident that our reserve fund is 20,000*l.*, and this 107,000*l.* is, therefore, surplusage on that account. Then I said as follows:—"But if, sir, you were to think that I might do something in the direction of applying part of it in some such way"—that is towards the reserve fund—"I should be ready to consider it. But as to applying the whole, all I can say is that it would be quite preposterous, and it would put me in this position—that I should have to come, upon the first opportunity, to Parliament to ask to get rid of the reserve fund clause of 1852." That is the clause that said our reserve fund should be 20,000*l.* "What is the use of putting upon me to do that? It would be ridiculous to suppose that this company could go on with such a reserve fund as 20,000*l.* It does not affect to have done so. It is quite true that it has gone beyond the limit prescribed by the Act of 1852. But is it a thing to be regularised? I say yes; and I say that Parliament should do nothing to undo the work of self-reparation that the company has been carrying out. If any reasonable proposal had been made to me I might, for peace, have assented to it. If the London County Council had said, 'This is a matter of compromise—you have collected and amassed this amount illegally—now put 50,000*l.* to these works, for instance, and then you may make the rest the reserve fund, I do not know that I should have said, No. And if you, sir, of your own motion, were to suggest such a course to me, it would receive, certainly, as far as I am concerned, my favourable consideration. It is not illegal, of course; but if you think there is any *via media*, or would allow me to suggest one, I will do so with pleasure; but really I do not see why it should be done. It seems to me I have only got the natural amount of reserve fund even now, and I do not see why I should be touched. I may point out that I only use it for reserve fund. I have not attempted to pay back dividend, or anything of that kind, since 1852." Now, therefore, having given the Committee that leave that they might divide the thing into two, if they pleased, they did divide the thing into two, and I was quite satisfied.

(Chairman.) I see what I did not know—that instead of getting the general privilege of having a reserve fund of one-tenth of your capital, you were tied down to a reserve fund of 20,000*l.*

(Mr. Pember.) Yes, as I pointed out to the Committee, of course with great care then, that was our fault; it was a stupid thing to do.

(Chairman.) Is that still the limit of the West Middlesex?

(Mr. Pember.) No, because I have got that 55,000*l*.

(Witness.) 55,000*l*. was added to the reserve fund in 1894.

(Mr. Pember.) That was a compromise I suggested, which was carried out. As to who produced the piece of paper on which it was written I do not know, and I do not care two straws, but I know the idea of the compromise came from me.

(Mr. Freeman.) I have the proceedings before me.

(Mr. Pember.) So have I.

(Chairman.) Have we not had enough?

(Mr. Freeman.) My friend, Mr. Pember, states a thing which is absolutely inaccurate, and I want to put the matter right.

(Mr. Pember.) Here are the proceedings, and they speak for themselves.

(Mr. Freeman.) Will you be quiet?

(Mr. Pember.) No.

The witness withdrew.

(After a short adjournment.)

Mr. MATTHEW WILSON HERVEY re-called and further examined.

26,080. (Chairman.) You are engineer to the West Middlesex Company?—I am.

26,081. How long have you been engineer to the West Middlesex Company?—Ten years; and I was assistant engineer before that for a further period of 10 years.

26,082. A description of the works of the company has already been put in, I think?—That has been done by Mr. Wybroo.

26,083. Have the three filter beds and the tunnel under the river from Barnes to Hammersmith, referred to in that description now been completed?—Yes.

26,084-S. And taken into use?—Yes.

26,089. In your district, as in the others, there is the usual confusion about the rate of increase of population?—Yes, it is corrected according to the return made by Major-General Scott now. From 1892 onwards it agrees with Major-General Scott's statement.

26,090. What population do you assume for your district in 1937?—1,411,967.

26,091. What decennial increase is that based upon?—22·63.

26,092. Why 22·63; where do you get that from?—That is the rate of increase with regard to the population between 1881 and 1891. There was an increase of 101,719, and that is an increase of 22·63. You asked us to base our calculations on the report laid down by Lord Balfour of Burleigh's Commission, and those were the figures dealt with by that Commission, namely, the population in 1881 and the population in 1891—those 10 years.

26,093. Do you mean to say that your proportion then of decennial increase of 22·63 went to make up Lord Balfour's average of 18·2?—Yes, for those 10 years.

26,094. (Major-General Scott.) When we come to add all the population accounted for by the several companies, will the total amount be the total taken by Lord Balfour's Commission as the population in 1931, plus a decennial increase of 18·2 to 1937?—Yes.

26,095. (Chairman.) Assuming that increase of 22·63 to prevail in the future, you say you will get a population in 1937 of 1,411,967?—Yes.

26,096. That, at 35 gallons per head, will make a total of 49,418,845 gallons per day?—Yes.

26,097. Do you want to introduce another rate of increase?—I wish to show that it did not increase as rapidly between 1886 and 1896 as it had done between 1881 and 1891.

26,098. Very well; give me the rate of increase between 1886 and 1896?—15·30 per cent.

26,099. In 10 years?—In the 10 years, 1886 to 1896.

(Mr. Freeman.) I brought up the clause, my Lord; Mr. F. H. Wybroo. I brought it up and I called a witness upon it.

(Chairman.) That was the clause compelling them to spend the whole of this balance, was it?

(Mr. Freeman.) Yes, that was the principle, and the company were then asked by Sir Joseph Pease, who was the chairman, whether they agreed to the clause at all. They said they would fight it *in toto*, and then for six pages the Committee practically cross-examined my friend, Mr. Pember, and the witness alternately.

(Chairman.) Mr. Pember generally puts himself forward as a witness, I observe.

(Mr. Freeman.) Yes, my learned friend was in his usual capacity; he was more witness than advocate, and he was inaccurate there too; however, I fancy, finding how the Committee were going—

(Chairman.) I think I can read between the lines. I see Mr. Pember threw overboard half the Bill in order to save the other half.

(Mr. Freeman.) Yes to save himself from shipwreck.

(Mr. Pember.) Yes, I did, and the clause was so drawn that I call the clause mine.

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26,100. Therefore the rate of increase that prevailed between 1881 and 1891 has not been maintained according to that?—No.

26,101. (Major-General Scott.) There is no reason why there may not come a wave of increase later, which may make up the deficiency?—There is no reason, but of course I am unable to say whether it will or not.

26,102. It is a short period on which to discredit the conclusions of Lord Balfour's Commission?—The same length of period, 10 years.

(Chairman.) At any rate, all those various and perplexing figures that have been given to us tend to show that Lord Balfour's Commission took a high enough figure.

(Mr. Pember.) Yes.

(Witness.) Certainly.

26,103. (Chairman.) If anything it is above the mark?—Yes.

26,104. (Mr. De Bock Porter.) Is your area largely filled up?—No, we have a very large country area out in the north-western district.

26,105. In the Willesden direction?—Yes, and right up to Hendon.

26,106. (Chairman.) Just let us complete this, as we have had this fresh figure. If the decennial increase is 15·5 per cent., then your population in 1937 will be 1,072,101?—Yes.

26,107. And that at 35 gallons per head will require 37,523,535 gallons per day?—Yes.

26,108. That is something like 12 million gallons a day less than it will be upon the figure that you gave before?—Yes.

26,109. Your present authorised draught is what?—24,500,000 gallons from the Thames at Hampton, and under the Staines Reservoir Scheme we shall get an additional 11,670,000 gallons a day, or in case of emergency 15 million gallons a day.

26,110. Then that makes up your ordinary supply of 25,667,000 gallons. Is that right?—24½ million gallons, and if you take the average additional 11,670,000 gallons.

26,111. Those two added together make 36,170,000?—Yes.

26,112. Then, according to you, you will only be short, even upon the highest estimate of population, upon Lord Balfour's estimate of population that is, 10 million gallons a day in 1837?—Yes.

26,113. Of course, you propose to get that 10 millions from the Thames?—Yes.

26,114. What would it cost?—I have estimated the cost of getting that additional 10 million gallons at 300,000*l*. But, of course, it is a difficult thing to estimate, having regard to what we have already heard from Mr. Middleton.

Mr. M.W. Hervey. 26,115. Surely it is more than 300,000l.—that is only one item?—That is the addition to the Staines Reservoirs.

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26,116. 300,000l. additional for the Staines Reservoirs and you want other things besides, do not you?—To distribute the water, yes. To distribute the water and everything else we shall require 1,250,000l.

26,117. We may as well get the items for that. You will have to enlarge your reservoirs at Barn Elms by 25 per cent. ?—Yes, that will be 50,000l.

26,118. You will want a covered reservoir?—Yes, which I estimate at 50,000l.

26,119. Filter beds?—150,000l.

26,120. Mains?—300,000l.

26,121. That includes a 42-inch main from Hampton up to Barnes, does it not?—Yes.

26,122. Engines, boilers, and buildings?—200,000l.; and ordinary expenditure on services 200,000l.

26,123. That makes your 1,250,000l.?—Yes.

26,124. (*Sir George Bruce.*) Is that all due to the 10 millions from Staines?—No, that is to distribute the amount of water I stated we shall have to distribute in 1937.

26,125. (*Chairman.*) Quite so, but that is only the cost of distributing 10 millions beyond what you have got now?—No, it includes everything in distributing the amount of water that I stated will be probably necessary in the year 1937.

26,126. (*Sir George Bruce.*) What is the total increase which is represented by that 1,250,000l.?—The difference between the amount we are now pumping, which may be put in round numbers at 24½ million gallons, and the amount I estimate that we shall pump in the year 1937, which is 49 million gallons.

26,127. Instead of 10 million gallons it represents 25 million gallons?—Yes.

26,128. (*Major-General Scott.*) Is the whole cost of the works for distributing and dealing with 25 million gallons additional, only 1,250,000l.?—Yes, that is what I have estimated it at.

26,129. (*Chairman.*) That includes nothing for extra storage for your present draught of 24½ millions?—No, it does not.

26,130. You still assume that you will go on taking that draught direct from the river to the filters?—Yes, I have assumed that.

26,131. (*Major-General Scott.*) Does this 1,250,000l. include capital to be expended on the Staines reservoirs authorised, but not expended?—No, it has nothing to do with that. It has nothing to do with the present works that are being constructed.

26,132. (*Chairman.*) This is over and above the present Staines works?—Yes.

26,133. (*Major-General Scott.*) And over and above all capital authorised up to the present date?—No; the uncalled capital of the company is included in the 1,250,000l.

26,134. You mean the authorised capital, but unexpended?—Yes, authorised but unexpended.

26,135. Can you say roughly what that amount is?—There is 230,000l. unexpended of the present authorised capital of the West Middlesex Company.

(*Mr. Pember.*) I see the average daily supply of the company in gallons for 1898 was 21,336,379 gallons.

(*Chairman.*) Have we had that?

(*Mr. Pember.*) He gave his present draught as 24½ millions, he does not exhaust his present draught, as I understand.

(*Witness.*) It is the average; I was speaking to General Scott of the maximum.

(*Mr. Pember.*) That is what you did not say.

26,136. (*Chairman.*) What did you give as your maximum draught in 1898?—It is 23,917,011 gallons.

26,137. So that you have never reached what you might draw yet?—Within 500,000 gallons roughly in round figures.

26,138. You are entitled to 24½ million gallons?—Yes.

26,139. And you say your maximum draught is 23,917,011 gallons?—Yes. That I may explain is the

average of a week, the daily pumping would be higher than that probably on certain days.

26,140. Have you got your highest day?—No, I have not got the highest day.

26,141. Are you under the daily limit?—Under the daily limit.

26,142. Does your 21 million gallons odd in 1898, that is, your daily supply, include the trade supplies and the meter supplies?—Yes.

26,143. It includes everything?—Yes.

26,144. I do not think we need distinguish between trade supplies and meter supplies. I will go at once to the subject of severance. Is severance of the sources of supply and means of distribution between the county of London and county of Middlesex possible as far as your company is concerned?—It is possible.

26,145. It is possible?—Possible, but it would be a very difficult thing to do, I think.

26,146. Would it be expensive?—Yes, it would entail a large expense—it is very difficult to estimate.

26,147. Can you give us shortly some of the chief difficulties that would arise. We do not want all the details, I think?—Several of our reservoirs within the county of London supply outside the county of London, and similarly reservoirs situated outside the county of London supply inside the county of London; and all the mains are so laid down as to conveniently afford a supply under these conditions. If those conditions were altered, it would mean duplicating a very large number of the mains. It must necessarily be so, and that would be a very costly matter.

26,148. Where are your subsidence reservoirs now?—At Barnes.

26,149. That is in Surrey?—Yes.

26,150. Is it wholly in Surrey?—A small portion of one of the reservoirs happens to be in the county of London, by reason of an outlying boundary so causing it to be. The river practically separates the county of London from Surrey, and this is a portion of a reservoir which comes in a detached portion of the county of London.

26,151. What is the total of the amount of your supplies in the county of Middlesex; how much do you supply in the county of Middlesex?—Our supply is wholly in the county of Middlesex. We supply nothing in Surrey.

26,152. Yes, but you supply something in London, do not you?—Yes, in the county of London.

26,153. You have given us your total supplies in 1898 as 21,336,000 gallons at present?—Yes.

26,154. How much of that is supplied in the county of Middlesex and how much in the county of London?—It is almost impossible to separate it. The whole of the water is pumped direct from Hammersmith through London to outside the county of London, and the draw off in the county of London is taking place the whole of the time as well as —

26,155. Do you mean to say you can give me no idea?—No, I am afraid I cannot.

26,156. Give me the number of supplies you have got in the two counties?—Inside the county of London there are 62,262 supplies, and outside the county of London 21,128.

26,157. Cannot you give me approximately how many million gallons you require for those two sets of supplies —

(*Major-General Scott.*) What is the amount per supply? You know the amount per supply.

26,158. (*Mr. Pember.*) Would the number of gallons be something like in proportion to the number of supplies?—It is roughly three-fourths and one-fourth.

26,159. (*Chairman.*) Therefore not six million gallons a day into Middlesex?—About that.

26,160. You would have to divide your subsidence reservoirs, which you have told me are all in Surrey, in the proportion of three-fourths and one-fourth if London and Middlesex are to be separated as regards supplies and distribution?—So far as the reservoirs are concerned that might be, but then the whole of the water is passed from the reservoirs to the pumping station at Hammersmith by one common tunnel, so that the separation of the reservoirs would be practically of no use.

26,161. You mean you would have to have a fresh tunnel?—We should have to have a fresh tunnel.

26,162. Will you tell me any other difficulties, I really cannot go through all the other details with you. Will you tell me any other prominent difficulties in regard to severance between the counties as far as your company is concerned?—It would be precisely the same at Hampton. There the whole pumping machinery is in the county of Middlesex. If that is to be separated, it would be very difficult with regard to the mains between Hampton and Barnes. On the other hand, the filter beds would have to be separated, so as to filter a certain amount for the county of Middlesex and a certain amount for the county of London. The whole of the distributing mains from the Hammersmith pumping station would have to be remodelled, so as to pump direct into the county of Middlesex without going through the county of London, or interfering with those mains supplying the county of London, which they do at the present time; and the service reservoirs similarly.

26,163. Does the whole of your supply pass through the Hammersmith pumping station?—The whole of our supply passes through Hammersmith pumping station.

26,164. (*Major-General Scott.*) Do you consider it is extremely difficult to divide particular filter beds and engines in the way that would be necessitated, assuming that a severance took place as suggested by Sir Alexander Binnie?—I think it would be very difficult.

26,165. Are your filters so connected and made to act as one system, that severance of particular parts would involve the reconstruction of conduits, and a great many other arrangements?—It must necessarily be so. The whole of the water is now collected into one shaft, from which it is passed through the tunnel to the pumping station at Hammersmith. This would necessitate making a new shaft and a new tunnel.

26,166. (*Chairman.*) Where does that tunnel go to?—From our filter beds at Barnes to the pumping station at Hammersmith.

(*Chairman.*) If you will tell me any other prominent difficulties in the way of severance, I shall be obliged to you, because I am unable to follow this subject.

26,167. (*Major-General Scott.*) With regard to the appropriation of the New River conduit (which is now authorised and in process of construction) for the purposes of Middlesex. Is that one of the proposals?—That was the proposal made by Sir Alexander Binnie.

26,168. What have you got to say to that?—I think it would be a difficult thing to do, as the work is proposed to be arranged. The pressure in the main passing through our district can only be equal to that of the level of the reservoir at Cricklewood, which is merely level with the existing surface of the ground; and under that scheme it is to be repumped from there to Fortis Hill; and, therefore, unless machinery were to be put up at Hampton, capable of pumping into a main to supply the West Middlesex district in the county of Middlesex, or else pumping machinery were put up at Cricklewood to repump it from there again, as the scheme now stands it would be of no use for the supply of this company's district. It would have to be very much remodelled.

26,169. (*Chairman.*) Is there any possibility of giving independent machinery at Hampton to the county of Middlesex?—No, I think not, inasmuch as it would interfere with the supply to the county of London.

26,170. I suppose you could get another independent main from Hampton to Barnes?—Yes, you could do that, but it would be a very expensive matter. We are just going to lay a new main now from Hampton to Barnes for the supply of the district.

(*Mr. Pember.*) It would be a very difficult thing to show that it would be an easy matter to establish.

26,171. (*Chairman.*) I cannot follow these details. If you will state in your own way any other difficulties that you see in the way of severance of sources of supply and means of distribution between the counties of Middlesex and London, pray do so, for I am incompetent to ask you?—I think I have explained as far as I can the difficulties in relation to the actual scheme as propounded and laid down. I do not think it is possible generally to describe it.

26,172-3. Sir Alexander Binnie did propound some sort of scheme?—I think I have stated generally now all that I have to say.

26,174. Very well, we will not trouble you further on that point?—I do not think I can give you any further information on that point.

26,175. You have got Bills in Parliament this year, have you not?—We have.

26,176. That is, to complete the 42-inch main from Hampton to Barnes?—Yes.

26,177. That is intended to subserve the Staines Reservoir Schemes, is it not?—To enable us to take the water we shall get under the Staines Reservoirs Scheme for the supply of our district.

26,178. Are you also asking for additional power to draw more water from the river?—An additional five millions a day on an average.

26,179. In all events, or only in certain events?—Till the Staines Reservoirs are complete. Till then we ask for the power to take an additional five million gallons a day on the average, with power to cease when the Staines reservoirs are complete.

(*Mr. Balfour Browne.*) You had this before from the witness when you were examining him before on the subject of inter-communication.

(*Chairman.*) I cannot profess to carry everything in my head.

26,180. (*Mr. Balfour Browne to witness.*) I think you stated all that before?—I did.

26,181. (*Chairman.*) You have had some experience as to mud in reservoirs, I believe?—Yes.

26,182. Do tell us what it is?—We cleaned out a reservoir 18 months ago, which had not been cleaned out for a period of 30 years.

26,183. Where was that reservoir, to begin with?—At Barnes.

26,184. Does that receive the water pumped direct from the river?—Pumped direct from the river.

26,185. Now give us the result of this cleaning?—The accumulations of those 30 years amounted to an average of 8-42 inches of liquid mud. A very large proportion of that, certainly 50 per cent., was water, and, therefore, you may conclude that the thickness of the mud without the water would be about 4 inches or 4½ inches. That was from actual experience.

26,186. 4½ inches of mud in 30 years, pumping, I suppose, flood water as well as the water of the Thames as it comes in the ordinary flow?—Yes; we have to take the water more or less at all times. Before 1896, when we made four large reservoirs at Barn Elms, we had not the storage to take it, and we were unable to let the flood water pass. Therefore, this reservoir was really taking the water in all conditions from the river.

26,187. (*Mr. Mellor.*) Unfiltered water?—Yes, unfiltered water.

26,188. At what depth below the surface is that taken from the River Thames?—The top of the intake at Hampton is within 2 feet of the summer level, that is the level of the river is 2 feet above the intake main during the summer level, but, of course, now to-day we may have 5 feet on it. It is merely by reason of the flood.

26,189. (*Chairman.*) In flood time you get, I suppose, fouler water with more solid matter in suspension?—Yes, very much more, it is very much coloured.

26,190. (*Mr. Mellor.*) Have you had any experience of cleaning out a filter bed?—Yes. In 1886 we cleaned out 4 acres of filters that had been constructed in 1852, when the company's intake was moved to Hampton from Barnes, and in those filters the whole of the filtering material was removed, washed, and replaced.

26,191. Did you find any amount of mud inside the filter bed?—No, the material, of course, had a certain amount of colouring matter, but that must always be so to a certain extent, even the clean stuff you put down must have a certain amount of colouring matter, but it was not very much added to.

26,192. Then as I understand you, inside the filter bed, there is no bottom water. You know what has been called bottom water. I mean the residuum?—No, absolutely not. The whole of the matter in suspension is arrested on the sand surface.

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26,193. (*Chairman.*) We have heard something about a film that was formed on the top of the filter by the bacteria, as I understand?—Yes, that is so.

26,194. Is that film visible to the eye, or does it require a microscope or a scientific apparatus to detect it?—The film is distinctly visible to the eye. In the summer time, when the water is good, after a filter bed has been at work for a couple of months, you will not get a deposit of more than an eighth of an inch thick, but, of course, it is quite palpable to the eye. In the winter, when the water contains more suspended matter, that film is thicker, but it presents precisely the same appearance. You would not detect any difference.

26,195. In the winter there is a good deal of mud, I suppose, suspended?—Yes. Therefore the filter does not last so long.

26,196. (*Major-General Scott.*) There is an absolute block in the filtration after a certain time, or there would be?—An absolute block if you like to go on to that extent.

26,197. But you do not allow it to go on?—We do not allow it to go on to that extent.

26,198. (*Chairman.*) How is it that your filters get all this deposit, whereas your reservoir which is taken at an earlier and dirtier stage only gets this 4 inches in 30 years?—The deposit on the filters is very very thin. Of course, when I speak of one-eighth of an inch, that is taking a certain proportion of sand with it. If it was possible to cut the film off without taking a particle of sand, I do not suppose it would represent the thickness of a sheet of paper very often.

26,199. In what space of time does that accumulate?—Six weeks.

26,200. The sixteenth of an inch in six weeks would come to more than 4 inches in 30 years?—A sheet of paper is barely the sixteenth of an inch.

(*Mr. Pember.*) I do not suppose that it is a sixtieth of an inch.

26,201. (*Major-General Scott.*) What is the variation of the duration of the filters or of any particular filter, under different circumstances of the river?—I have known a filter bed to choke in four days, and I think I have known it go for three months.

26,202. What has that choking been caused by?—The choking occurs chiefly in the spring when fish spawn is coming down. It is chiefly the fish spawn.

26,203. (*Chairman.*) Here is a new element—fish spawn?—And it is a very difficult element, too.

26,204. (*Major-General Scott.*) Apart from that, taking the varying conditions of the river between the summer flow, when it is nearly all spring water, and the flow of the river in the winter time, when there are sometimes heavy floods coming down, what variation do those conditions cause in the life of a filter?—A month in the shortest, and three months in the longest.

26,205. Do you mean that any flood water that you have to deal with would not interrupt filtration in a less period than a month?—Not with subsidence such as we have now.

26,206. But, I mean without subsidence?—I have had no experience.

26,207. (*Chairman.*) Do you not take your ordinary water direct on to your filters?—No, it goes into the subsidence reservoirs.

26,208. (*Major-General Scott.*) But before you constructed your reservoirs at Barn Elms, you were obliged, as you said just now, to deal with water which was more or less muddy occasionally?—Certainly. Under these conditions, of course, it passed through the reservoirs, such as we then had, and a certain amount of subsidence takes place, as is instanced by this particular reservoir that I have been giving the particulars of as to the mud.

26,209. But, assuming that you dealt with water taken directly from the river under all the conditions, what would you suppose would be the shortest period that it would last in the worse conditions of the river that you have heard of, in fact?—I should think a week and the three months, such as I have previously given, would represent it—I should think so, but I have had no actual experience.

26,210. Do you find that when dealing with that kind of water, more or less muddy, that you are able to produce as good a quality of water as you can when the river is in a good condition? When I say quality I mean quality, in all respects, colour, limpidity, bacteria, and so on?—No; certainly the colour is worse in flood—always.

26,211. The colour?—The colour is worse.

26,212. You would never be able, absolutely, to produce a filtrate which retains its quality independent of any condition of the river?—No, certainly colour is a thing that always occurs in flood water. We cannot eliminate it.

26,213. We have heard from the chemists who have been here that an increase of colour means an increase in organic elements, does it?—Yes, I think that is so.

26,214. So that we may take it that the quality of the water is not as good when you have to deal with flood water as it would be if you were dealing with the river in its best conditions?—No, I do not see how it can be, because the river in its best condition is, I think, practically chalk water.

26,215. Then how do you propose to deal with the water that you obtain, not from the Staines reservoirs, but from the river in connexion with the Staines reservoir through that aqueduct—taken directly from the river and passed into the aqueduct and down to Hampton?—We should treat it precisely as we do to-day; taking the water from Hampton it would go into our subsidence reservoirs, and be drawn from them on to the filters.

26,216. So that you will deal with that water by subsidence before you filter it?—Certainly. I cannot do it otherwise. I have no means of drawing it directly on to the filters without passing it through the subsidence reservoirs.

26,217. Should you consider it necessary to do that?—I do not think it is absolutely necessary when the river is in the summer condition, such as it was this summer, but during flood it is different.

26,218. During the flooded condition I am referring to?—I think it would be desirable. The filters would last longer, and, therefore, the expense of cleaning would not be required so frequently.

26,219. Practically, do you mean then that if you did not treat that water by subsidence you would have to have more filters?—Quite so.

26,220. Your plant would have to be increased?—If one was not going to pass it through the subsidence reservoirs, I think, that would be so.

26,221. The difficulty must be met either one way or the other?—I think so, and it is, I think, the intention so to meet it.

26,222. I do not think it has been quite clearly made out that there is to be a provision of subsidence reservoirs to deal specially with that Staines water?—I think it must be so, because the water will be taken from the distributing reservoir at Hampton and distributed to the respective companies in precisely the same manner as it is now taken from the river at Hampton.

26,223. But you know that the provision of subsidence reservoirs is very different in different companies at present?—Yes, it is, of course.

26,224. (*Sir George Bruce.*) The Staines Reservoirs themselves would be subsidence reservoirs?—But General Scott is speaking of the water coming direct down the conduit.

26,225. I know, but as a matter of fact that would be so?—If it passed through the Staines reservoirs, of course, it would be more than equal to what any company does now with their existing subsidence reservoirs.

26,226. (*Mr. Mellor.*) What is the first sign of a filter choking?—The water cannot pass through the sand so rapidly, and unless you check the flow on to the filter, of course, the surface of the water in the bed rises.

26,227. As I understand you, that may happen at different lengths of time, for instance it might happen in a week, or it might happen in a month, or it might happen in two months?—Yes.

26,228. Is there any person whose duty it is to notice that at once, and to report it to you?—Yes, we have men on the watch night and day. The filter beds are never left for that purpose.

26,229. (*Chairman.*) Then, do I understand you to say that even with subsidence, and even with filtration, you cannot bring flood water up to a proper colour?—Subsidence will assist it very much. With the Staines Reservoirs' subsidence, and the subsidence we possess now, it will have a very material effect on the colouring matter generally.

26,230. But, I mean, will the colour come out good?—Good. I do not think probably you would notice the difference. It is only noted by what is called a colour test, by means of sliding one wedge over another.

26,231. But I understood you in answer to General Scott to say that if you took flood water the colour would always be bad?—I do not say bad. I say it would be more coloured in the time of flood than in the summer flow of the river.

26,232. Do you mean only so much more as can be detected by a nice apparatus, or so much more as would be sufficient to be detected by the eye?—You would see the difference in an ordinary bath, for instance, such as one would have in the morning. You would see the colour would be a little bit more yellow, but beyond that I do not think you would notice any difference.

26,233. (*Sir George Bruce.*) You would notice it in a bath, but you would not notice it in a tumbler?—No, you would not notice it in a tumbler.

26,234. (*Chairman.*) Certainly the monthly reports, as far as I have seen them, and I have seen them now for some years back, always report the colour as being excellent?—Yes, that is so, only it is greater; I think my reply to General Scott was that the colour was more marked during flood than during summer.

26,235. (*Major-General Scott.*) The colour has no effect on the transparency and limpidity of the water?—None whatever.

26,236. Then in applying to the water the ordinary test of transparency the result would not be affected by the small amount of colour that you refer to?—Not the least. You would only notice the colour, as I say, in a large body. You would not detect it in a small body.

26,237. (*Mr. Mellor.*) Would you say the water when coloured was as wholesome as when uncoloured?—I think so. I do not think there would be any difference with regard to quality necessarily.

26,238. You think the colour has nothing to do with quality?—Not necessarily at all. Take the Glasgow water, for instance.

(*Mr. Pember.*) It is very like the difference between diamonds of different water. It makes a great deal of difference in the value of the carat, but nobody but an expert would know.

(*Mr. Balfour Browne.*) It affects the value very much.

26,239. (*Major-General Scott.*) Do you concur with Mr. Restler in considering that there should be an apparatus for determining the rate of filtration. I do not know whether you heard his evidence?—I did. It would be a means of any outsider knowing what was being done, I admit, but beyond that I do not think necessarily the water would be any better filtered if proper supervision was given at all times.

26,240. Yes, but if you make it extremely laborious and difficult for your agent or employé to find out what is going on, it is much less likely that he would do so than if it were arranged so that he could find it out by a mere glance at the apparatus; it would be better attended to than if he had to take a great deal of trouble about it, would it not?—I do not know that it would affect the attendant so much. It is purely a matter of experience, I think, working filters in that way and controlling the filters by regulating the outlet cock.

26,241. But how can you now ascertain what the rate of filtration is?—We have a gauge which we stick into the filter and shut the bed off. As the bed lowers so this gauge shows so much—say an inch, 2 inches, or 3 inches, as the case may be, has passed right through the bed in an hour.

26,242. But in order to do that you have to shut the inlet valve?—You have to shut the inlet valve.

26,243. And cause the water to cease flowing into the filter?—That is so.

26,244. Would it not be a simpler arrangement if the person who was looking after the filters had merely to look at a dial which would tell him at a glance what the rate of filtration was of that particular filter?—I take it then it would have to be controlled in some manner by the individual.

26,245. It would have to be controlled by the apparatus, but still he would know if it was going on too fast, at once?—Yes, he would know that.

26,246. Are you aware that at Berlin and some other places they have all these arrangements?—Yes. It is a scientific arrangement for determining actually what is being done at any time. There is no question about that.

26,247-9. (*Mr. Mellor.*) I do not understand this. Do you object to it at all?—Not in the least.

(*Mr. Balfour Browne.*) I have nothing to ask.

Re-examined by Mr. PEMBER.

26,250-1. With regard to that reservoir which was cleaned. You did not, in giving your evidence just now, tell us the area of that reservoir?—Six acres.

26,252. And the depth?—16 feet.

(*Chairman.*) What reservoir is that?

(*Mr. A. de Bock Porter.*) Where the mud accumulated.

26,253. (*Mr. Pember.*) Where the 4½ inches of solid mud was, and double the quantity of liquid. That was after 30 years. Now I want to ask whether that was the reservoir that was filled, emptied, and re-filled and re-emptied several times in the course of the year or not?—Water was always passing into it and water was always passing out. The level of the surface of the water would vary to a certain extent, but not more than, say, four feet.

26,254. So that it was a reservoir which in effect was constantly being filled and re-filled, was it not?—Yes.

26,255. (*Chairman.*) What was the depth of the outlet pipe?—Below the surface of the water?

26,256. Above the bottom?—Four feet.

26,257. (*Mr. Pember.*) Four feet above the bottom. Now, perhaps you would not mind answering me this question: Supposing that that reservoir had only been filled once and emptied once in the year, would you have expected to find more or less silt in it? Supposing it had been filled and left, and then just filled only once a year?—Very much less.

26,258. You spoke of subsidence being a good thing, especially in the manipulation of flood water, and you said that the Staines reservoirs could act as subsidence reservoirs if you took the water from them, and your own subsidence reservoirs, of course, would act upon the condition of the flood water, too?—Yes.

26,259. About how many days' subsidence do you think it would take to make flood water what one would call fairly tractable water for your filter beds?—Do you mean the reservoir shut off in the meantime?

26,260. Yes, how many days' subsidence would make the water fairly tractable?—I should think six days.

26,261. You heard, I daresay, the evidence of Mr. Middleton and Mr. Hunter, and other gentlemen, as to the time at which they would take flood water?—Yes.

26,262. Do you think, in the great Thames Scheme such as was suggested by them, it would be advisable to take the water of the Thames in flood certainly as early as six days after a great Thames flood?—I think you might take the Thames water in less than that, because you would have the subsidence in the reservoirs after that. Take for instance the condition of the river to-day, or rather two days ago, when it was in very heavy flood, a greater flood than three weeks ago, when there was such heavy rain; the condition of the water then was comparatively bad, but to-day it is comparatively good. It is only a question of two or three days, and I should have no hesitation in taking all the water I could get to-day and putting it into our reservoirs.

The witness withdrew.

Mr. F.
Tendron.

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Mr. FREDERICK TENDRON called and examined.

26,263. (*Chairman.*) I believe you have been a director of the Grand Junction Waterworks Company for 14 years?—Yes.

26,264. And chairman for four years?—Yes.

26,265. You have also represented the water companies on the Thames Conservancy for four years?—I have.

26,266. Now, can you throw any light upon the question whether the consumer would get an advantage, financially, in the purchase of your company and of the other companies, by a public authority?—I have heard all that has passed on the subject between you and the various chairmen of the companies, who have already been examined.

26,267. Very little has passed between me and the chairmen on this subject. I could not get anything from them?—At all events what passed seemed to me highly important; for I must say that, personally, I felt great satisfaction at what you defined as fair terms of purchase.

26,268. I have defined nothing. I have only put certain suggestions to the witnesses to see what they had to say?—I was very much afraid that we might find in a case of arbitration that it was only as you now put it. That was also what struck me when I listened to the remarks of Mr. Balfour Browne. It struck me that there would not be so very much difficulty between the companies and the London County Council, if the committee of the County Council resembled their officers more, for whenever I have been brought into contact with their officers in any way I have always found a certain disposition of fairness towards the companies. But this question that you have put is so important that if you will allow me, my Lord, I will read you what I wrote on the subject.

26,269. Will you tell me what it is?—It is very short, and I can read it better than I can tell you. My memory is not good. "Assuming fair price as present and prospective profit from works in operation and authorised, there will be the profit that may be made over interest or dividend on further capital to be raised for new works, that is to say, for works not at present authorised; subject, of course, to the sinking fund being abolished and present rates maintained. Whether there will be a profit depends in the Grand Junction district"—for which I am answering now—"on some very important points, first, the management; secondly, that the new works required shall be only gradually constructed; thirdly, on the class and extent of the increased population; fourthly, on the prosperity of London trade, and the continuous enlargement of existing buildings." With your permission I will amplify these matters afterwards a little. "The consumer will get this additional profit after the companies have reached their maximum," that is to say, whether the management of the companies is left in our hands, or whether it is transferred to a permanent body, or even to the London County Council, the consumer can only get, apart from economies, the same benefit that he would receive from the companies after once they have attained to their maximum. For argument's sake I leave out back dividends. Of course I do not for one moment assent to giving up back dividends. I hope the day will come when we shall receive them; but I leave them out of the argument for a moment. "That stage, I say, would, in my opinion, be reached sooner by the companies than by a purchaser." Now, I have something more to say on behalf of the Grand Junction specially. The maximum 10 per cents have had the risk and low dividends to bear, and the effect of the sinking fund is to make them take the risk of extensions, and further limits them when the extensions are remunerative. Lastly, I wish to make this statement on behalf of the Grand Junction, that "The Grand Junction are prepared to carry out all works necessary for their district either by themselves or in confederation with the other companies." I do not know whether I have gone too far in the reply to your question, but I think that the object that you have in view is really to ascertain whether it will be a good thing for the consumer if our property is taken over.

26,270. I have endeavoured to follow you; and if I have followed you right you say this: leave the undertaking in the hands of the company, and they will attain their 10 per cent. maximum, and possibly

also their back dividends—waiving that for the moment—sooner than any public authority purchasing the company, would be able to arrive at the same financial point?—Yes.

26,271. Therefore, the consumer will benefit more rapidly if things are left as they are than if the company is transferred to a purchaser, if I understand you aright?—You have understood me perfectly.

26,272. You have mixed two things together. First you dilated upon what you thought the terms of purchase ought to be in fairness to your company, and then you went upon the results of management by your company or management by a public authority in your place. The two things are, as it seems to me, distinct. I do not think they are connected at all. Why do you say that your company should sooner arrive at that point at which it would be able to pay its maximum dividend, and consequently be called upon to make a rebate, than a public body? Why should you reach that point sooner than a public authority purchasing your undertaking, whose object would be the most disinterested zeal on behalf of its constituents?—The reply I made depends upon the terms of purchase. It is because I have understood throughout that if we are to be purchased, we are to be purchased upon the terms of our present and prospective profit.

26,273. Yes; but supposing you are purchased on the terms of your present income, and of any prospective income that the arbitrator may think you are fairly and reasonably entitled to, then that will put a purchaser exactly in the position in which you are. He will have bought, and paid for at its fair price, your present income, and any prospective increase. Why should the improvement that is to result in a reduction of charges come more rapidly if you remain in possession than if the purchaser is in possession?—I think I should rather like to modify what I said to this extent, that if I do not say more rapidly, I will say as rapidly, because I think that the difference is really not material, because I cannot see, given that, what the purchaser can possibly do more than the companies are doing, granted that their management even is as able. What can they save? If the opinion is that unpaid service is as good as paid service, and the unpaid service of men who have not had experience is as good as the paid service of men who have, they may save directors' fees. Then, again, with regard to the unpaid services of men who have no interest whatever in the property itself compared with men who have for years had a large interest in it, and who take great interest in the management of that property, I do not think that the saving would be much. I took out the figures myself of what the saving of a farthing in the pound would be on the rateable value of London according to the London statistics publication.

26,274. The saving of a farthing in the £?—It would be 37,000*l*.

26,275. I can no longer follow you, where does this farthing in the £ come in?—It simply comes in if you can effect a saving in directors' fees. The amount of saving would not be felt (if you take the directors' fees of all the companies), in the rates that are made. It is too small. It seems to me out of the question that the properties of the companies should be taken for the mere sake of saving directors' fees.

26,276. As I understand you, you say that if your company were now managed by a board of directors unpaid, having no interest in the company, and having no shareholders behind them, who have an interest in the company that the management would not be so good as it is with the present board?—I do not think it could be so good at first or for some years. I think that the key to it is continuous management. I do not wish for one moment to be egotistical, or to imply that I am a good manager of a company, but I will say that I was for many years a director of the company before I had much knowledge, and even now I find my knowledge is constantly increasing of the works of the company, and the details of management and everything else that is involved. I do not think that it is possible that a changing body could understand the details of one company, much less of the whole of these companies. You see how constantly the remark is made that these figures are bewildering, that this con-

tradictory statement is more than can be received, and a host of other matters. One is not born with the knowledge of managing a water company.

26,277. (*Mr. Mellor.*) The remarks about the bewildering figures are with reference to the evidence before this Commission?—Do what one will to get out the figures as simply as possible, it is impossible to deal with undertakings so old as these of the companies, and having passed through such checkered and varied careers without getting out masses of figures that sometimes seem to contradict one another.

26,278. But do I understand you to say that you think the company ought to have anything more than the market price?—I do not recognise market price in the matter. The Stock Exchange is exceedingly clever in forming an opinion as to whether a dividend is likely to go up or to go down, and then you will see a fluctuation in the stock of the company, as you might have noticed in the case of the Southwark and Vauxhall Company within the last three or four months, but they really do not go into the intrinsic value of the property or into the details that are necessary to form anything like a sound judgment, although the figures fairly bear out the value of the property according to the judgment of the public at the price of the day and at the time that that opinion is formed.

26,279. Do you object to the present market price?—I do not think it anything like represents a first-class security that you can only reasonably, in the present day, expect to pay you 3 per cent. I do not think that the present price represents the value of the Grand Junction stock. It is a mere question of whether somebody has died and wishes to put some stock on the market, or whether for the moment there are some buyers.

26,280. (*Chairman.*) What is the present price of Grand Junction stock?—112 to 115.

26,281. For a 50*l.* share?—For a 50*l.* share, and it is not so very long ago that a friend of mine who much wished to buy some 20 shares of the Grand Junction Company had to wait some months before he could succeed in buying them, and he had to pay 120*l.*

26,282. The only question is the present price, and you need not go into the history of all your friends?—The present price is 112 to 115, but I gave the reason why I am not satisfied with the present market price.

26,283. (*Mr. Mellor.*) I understand that your answer to me is that you are not satisfied with the present market price?—I am satisfied with it as it stands, because directors neither buy nor sell.

26,284. That is not the question. As I understand, you think that if the company is sold, the shareholders ought to have something more than the present market price; that is the question I put to you?—I think that they ought to have income. It is not a question of market price but of income. They ought not to suffer, having done so much for London. If their property is taken away from them they ought not to suffer in any way.

26,285. Then how many years' purchase of the present income would you give them?—A sufficient number to give them the present and prospective income—not only the present income but something more.

26,286. I understand the present income, but why should you go to the prospective income? I cannot follow you. How much do you put down in your own mind for the prospective income?—I put down in my own mind—and I have figures to bear out what I say—that if the Grand Junction are allowed to carry on their business as they are carrying it on at present, with a due regard to the public interests as well as to the interests of their shareholders, they will become, by the time their works are carried out, and have been in operation for a reasonable period, a 10 per cent. company, and I do not want to part with the property under.

26,287. (*Mr. De Bock-Porter.*) But you were very much nearer 10 per cent. 12 years ago than you are now?—Very likely. We have had great difficulties to contend with. We have had strong opposition, apart from that; there are the expenses that have been involved. We have had to go through a time of frost, which put very heavy charges upon us, but we are actually earning at present 9 per cent., although only paying 7½.

26,288. (*Chairman.*) Seven is your last dividend?—7½.

26,289. I beg your pardon; your own return says that?—There are some 7 per cent. shares. Now for the last two years we have really earned within a fraction of 9 per cent., and our shareholders have not pressed us to pay a higher dividend, because we explained to them clearly that if we wished to maintain our position we must look after the interests of the public, and be in a position to give them a full supply of water of the best quality that we can obtain for our district.

26,290. The only question you were asked was, where does your prospective income come in? If you could confine yourself to that, and just give an answer to that, I should be obliged?—It is so difficult to give a direct answer without reasons.

26,291. If you cannot, say so, please?—But I can say so, if you will have the patience to listen to me in the matter. I will say that we are earning 9 per cent., and I do not see any reason, apart from the outlay that we are bearing for future works, which we expect to be profitable, why we should not be paid, not upon the present market value, but upon our present and prospective profits.

(*Mr. Mellor.*) I want to ask you one question with regard to the saving, if you will be good enough to answer me. As I understand you, the only saving you contemplate is directors' fees.

(*Chairman.*) You mean in the case of purchase?

26,292. (*Mr. Mellor.*) Yes, assuming the case of purchase, that is the only money you think will be saved?—In the case of purchase I contemplate a certain amount of saving from directors' fees, a certain amount from the reduction in the number of chief officers, and some other economies of management that might be effected. I am speaking of economies of management at present.

26,293. The County Council say that they can raise money at ½ per cent. less than you can; what do you say to that?—I think that that is an important consideration, but that the same end would be obtained if the moneys required for big works were obtained upon the joint and several guarantees of the various companies.

26,294. (*Sir George Bruce.*) You mean all the companies combined together?—I mean all the companies combined would from a large, not only security but a large marketable security, which is so important.

(*Mr. Pember.*) I do not think there has been any statement, if I may venture to say so, to the effect that the London County Council could borrow money at a ½ per cent. cheaper.

(*Mr. Mellor.*) They said so in evidence, I think, two or three times over, but I cannot refer you to the precise question.

(*Mr. Balfour Browne.*) As a fact, we do borrow.

(*Mr. Pember.*) Mr. Gomme said they could borrow at 2*l.* 12*s.*, and on the very same page on which he said that there is an instance given of a company borrowing at 2*l.* 16*s.*

(*Mr. Mellor.*) I only wanted the witness's opinion, Mr. Pember, upon the question I put to him. That is all I wanted.

(*Mr. Pember.*) I beg your pardon.

(*Witness.*) May I mention that we issued some 4 per cent. debenture stock at 150, and that is borrowing under 3 per cent.

26,295. (*Chairman.*) The present dividend you pay now is 7·5 per cent.?—Yes.

26,296. That for a 50*l.* share is 3½?—That is the case, and it is on that price that the Stock Exchange values it.

26,297. Supposing you make out that that income is likely to be permanent, you would expect a purchaser to give you such a sum as that each shareholder would get 3½*l.* for the price of his share?—I wish to answer your question directly, but it would be misleading if I did. I contend that if we are purchased we ought to be purchased on our profits and not on the dividend we pay. If we are pleased to deny ourselves paying a larger dividend because we want to provide for the future, and that future price—

26,298. But then if you did not provide for the future, you would not get your prospective income. You

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Mr. F. Tendon. cannot get it both ways?—Quite so. Then there is a prospective income beyond the 7½.

26,299. We will come to the prospective income by-and-bye, but I want to deal with the actual income first?—I am quite satisfied with that as the first instalment.

26,300. Assuming there is purchase you want, therefore, each shareholder to get so many years purchase of his actual income as would produce the same income in another investment equally good?—Yes.

26,301. Then that would be in another investment of about 3½ per cent., I suppose?—I expect it would be something of that sort.

26,302. Then if the arbitrator fixes the right sum, he would deal conclusively with your present income, but now you say there is a prospective income?—Quite so.

26,303. That prospective income must be of course speculative?—I beg your pardon, to a certain extent no, because we actually earned during the last two years 1½ per cent. more than that 7½ per cent.

26,304. But during the last two years what you have been able to pay your shareholders has dropped down one or even more per cent?—Give us credit for that.

26,305. Yes, but you have dropped down from 9½ per cent. in 1886?—It was so.

26,306. Therefore, as far as appears by what you have paid your shareholders, your income has been a declining one?—The dividend paid when the shareholders received 9½ per cent. was a higher dividend than ought to have been paid with prudent management. I do not want to make any undue reflection on the past. We were all shareholders in it. We were all threatened and constantly assailed, and there was a sort of feeling that whatever you earned you should pay as dividend.

26,307. I will assume in your favour that you could satisfy an arbitrator that you have some prospective income to hope for, but it is only a hope. It cannot be proved as a fact?—It can be proved by the past two years.

26,308. The past two years are not the future two years?—But we are increasing every year.

(*Chairman.*) Very good. Then I will ask you nothing more about that.

26,309. (*Mr. De Bock Porter.*) The dividend is fluctuating very wildly—more so than almost any other company?—It is so.

26,310. That shows there must have been very imprudent management surely, if you were dividing up to the hilt and could not sustain that?—I am not responsible for it. I think that at all events for some years the management in that respect has been exceedingly prudent, and we are not even paying all that we are earning, and we are providing for future works, that will be productive and that is our duty to provide for.

26,311. (*Chairman.*) I will try once more to get your view. I will assume that you are able to show that you have some prospective increase of income in view. Do you follow me?—Perfectly.

26,312. You say you are entitled to be compensated for that?—Yes.

26,313. Only the present value of course must be discounted. If you receive a sum of money down for that prospective income, it must be discounted to its present value?—I follow you.

26,314. Do you assent?—I assent to it so far as it goes.

26,315. Then the purchaser will buy a deferred annuity of which the value will be exactly the sum he pays?—Yes.

26,316. He will be no worse off, therefore, than you the company, are?—Admitted he takes our place.

26,317. He will be buying a chance instead of a certainty?—Yes.

26,318. Then so far there is neither gain nor loss to the purchaser?—Quite so.

26,319. Then why is not he to arrive at the blessed consummation of reducing the rates as quickly as you would?—I may then assume there would be no question of equalization of rates or anything of that kind.

26,320. Do not trouble your head about conditions of the problem that I am not putting to you?—Then he is simply in our place, and why should not he do as well if the management is as good.

26,321. That is exactly what I am asking you?—I do not see why not.

26,322. Because just now you put it that you would arrive more rapidly at the reduction of rates to the consumer than the purchaser would, and I want to know why, because if the purchaser pays the right sum he will be in exactly the same position as yourself?—If there is no change, of course the two things are equal to the one—if they are able to manage it as ably and so on.

26,323. How do you justify your opinion?—I will justify my opinion by what I have stated, and which is before your Lordship, on the assumption that we are really left in peace. There are three companies that are not paying yet their maximum dividend; I cannot answer in any way for two of them, but I can to a certain extent.

26,324. I wish you would confine yourself to your own company. If you would I should be very grateful to you?—I can speak for my own company.

26,325. Then please answer for your own company and not go off to the others?—Then I say if the sinking fund were abolished and there was something like an appearance of continuity in our possession of our own works I should be willing, and I think my board would be willing; in fact I know they would, and I have heard no dissent from the shareholders when I once referred to it, I should be willing to let them be sharers of the increase over the present rate of dividend that we are paying.

26,326. Oh?—Then I will drop it; if it is too visionary I will drop it.

26,327. It is quite visionary?—Then I will drop it.

26,328. How much of your capital is at 10 per cent. dividend, and how much at 7½ per cent.? Is that shown in the tables you are going to put in?—Yes, 846,000*l.* is at the maximum.

26,329. That is 10 per cent.?—That is 10 per cent.

26,330. And how much 7½?—154,000*l.* is 7½.

26,331. (*Mr. De Bock Porter.*) It is the A. and B. stock that is 10 per cent., is it not?—You will find that in the Financial Return of the company.

26,332. (*Chairman.*) I do not find stated there what the rate per cent. they are entitled to is?—You will see it on the 4th column 7½ per cent.

26,333. No, that is the rate per cent. paid—that is the annual dividend paid. The next column, which is the maximum statutory dividend, is a blank?—True. Then will you take it from me that the A. and B. making 846,000*l.* are entitled to the 10 per cent., 154,000*l.* C. to 7½ per cent., and 270,000*l.* D. to 7 per cent.

26,334. Then D. have been receiving their maximum dividend for some time now?—Yes.

26,335. (*Mr. Lewis.*) Are all these stocks entitled to back dividends?—No, only the 846,000*l.*

26,336. (*Chairman.*) Not the C. and D. shares?—Not the C. and D. shares.

26,337. (*Mr. De Bock Porter.*) They have received their full dividend from the time they were issued?—Not quite. It is not a preferential issue, and when the frost occurred we were obliged to reduce both C. and D.

(*Chairman.*) They came down to 6½ in 1895.

(*Mr. Pember.*) They all went down to 6½.

(*Witness.*) Will you allow me to correct myself?—In reply to the question put, I was under the impression that only the maximum 10 per cents. were entitled to back dividends, but I am told by the secretary that the whole of our stocks A, B, C, and D, are entitled to share in back dividends.

26,338. (*Chairman.*) However, the C and D stock are only up to the maximum. They have no dividend to claim except for that one year?—Only for that one year.

26,339. (*Mr. De Bock Porter.*) Is the accumulation of back dividends very large on the A and B stock?—I think it is very heavy. I think you will find some- See where that it is over a million.

26,340. Then there is no prospect of the consumer getting relief from your company?—Unless by this matter of arrangement that I hinted at before—I mean if the property remains in our hands.

26,341. (*Chairman.*) When you throw out these suggestions about matters of arrangement, are you prepared

See 26,

to give a pledge that you will go to Parliament and submit a Bill cutting down your maximum, because otherwise it is idle talk?—If we are left to do the things and present the Bill ourselves.

26,342. Then this is worth considering?—I thought so.

26,343. You are prepared to present a Bill in which your maximum dividend shall be cut down to the present rate?—I am perfectly certain that the Grand Junction Company, and I have no doubt the other companies too, in return, because we must have something in return if it is a matter of arrangement.

26,344. What is it you want in return?—To be left in peace.

26,345. There never is to be any purchase by anybody, you mean?—Certainly not for a long term of years.

26,346. (*Mr. Lewis.*) And to abolish the sinking fund, I suppose?—And abolish the sinking fund—in fact to make a bargain in the interests of the public, and not in the interests of a special body.

26,347. (*Chairman.*) This may be worth considering all round, perhaps. Have you got a Bill in Parliament this year?—We have a Bill for the benefit of the public generally.

26,348. Never mind that. Have you got a Bill?—That is the Bill.

26,349. You have not put these clauses into that Bill, have you?—No, certainly not.

(*Mr. Pember.*) And they shall not, as long as I am their counsel.

26,350. (*Mr. Lewis.*) What capital are you applying for in this Bill this Session?—It is the single Bill; it is the joint Bill for effecting a connexion between the different companies. That is the only Bill.

(*Mr. Littler.*) There are no prospects of peace from the other side at present, my Lord.

26,351. (*Chairman.*) Have you anything more to say about the advantages or disadvantages of purchase to the consumer—whether it would be any benefit to the public?—I do not think it would be any benefit to the consumer.

26,352. If you had any more reasons to give me I should have listened to them?—I thank you for having listened so patiently.

26,353. Now, with regard to management: I presume the chief difficulties of management are in the works—pumping machinery, storage reservoirs, filter-beds, mains, and all those things?—I think it is very desirable that we should understand the recommendations made by the engineer as to new works or alterations in the old works.

26,354. Do you mean the Board exercises any independent judgment in these matters, or does it take the advice of the engineer?—It does not take the advice of the engineer without some investigation and judgment. One learns in time to place great confidence in one's officers.

26,355. I mean has it ever occurred in your time that you have rejected the advice of the engineer and executed some work different from that which he recommended?—No, I think we have always had reason to place very full confidence in him.

26,356. It is so easy to answer what you are asked?—No, my Lord, I do not know of any.

26,357. I wish you would, instead of making a little speech, answer the actual point of the question?—I will endeavour to answer you directly.

26,358. You do not remember any instance in which you have ever disregarded the advice of your engineer?—Not on any important matter.

26,359. Supposing your engineer were employed by the public body that purchased, they would have come to the same wise decisions that you did, and acted upon his advice?—I will assume so.

26,360. Why then would their management be worse?—I do not think I have taken up the position

of proving that other people's management would be worse than ours.

26,361. I thought you said if a public body bought it, then the management would not be so good as yours, because they would not have had experience, and all the rest of it. If the advice of the engineer is available for both, what difference is there?—I see the way you put it, and I cannot but agree with you in the way you do so.

26,362. I want you to put it in your own way. I only suggest to you difficulties that occur to my mind; I am keen to have them solved?—Theoretically it would be the same, and yet practically one hardly thinks that it would be; but I may be quite wrong.

26,363. (*Major-General Scott.*) Has your board postponed works from motives of policy, which your engineer recommended you to undertake?—I do not remember ever any work being postponed.

26,364. You do not?—No, I do not.

26,365. I am pursuing the question as to how the directors exercise their office with reference to a recommendation of their engineer, it was in pursuance of that subject that I asked you that, what do they do? You do not wish me to assume that they are mere nonentities?—No, certainly not.

26,366. They do something, and what do they do?—The engineer brings in his report of the works that are desirable. If any big scheme is proposed, in conjunction with other companies or for ourselves, like the purchase of land or the making of additional filter beds, or any work of that kind, the directors go into it, and sometimes go down and visit the spot, and get all the information they can from the engineer, and between themselves they consider the desirability or not of undertaking that additional work or making changes.

26,367. Then, doing all that, it would be a curious thing if on no occasion there was any difference between yourselves and the engineer, would it not?—Now and then differences have existed for a time. I remember when land at Ealing was proposed for purchase; it took some time before the board came to the conclusion that it would be a desirable thing to do. Equally so with other land that we have bought at Hampton, and so it is with works that are recommended to us. It was only the other day that there was a proposal to spend a large sum of money in thoroughly renewing some big pumping engines we have at Hampton. The engineer mentioned the amount of expenditure, and there was a good deal of conversation about it, because we do not like spending money needlessly, but at all events it was done, and it will be done.

26,368. Then I think, taking the particulars of your answer, in some cases the action of the Board represented a postponement to a certain extent, or for some time of those propositions with regard to the purchase of land, for instance?—For some little time, till the matter was properly considered.

26,369. How long a time would that be?—A few weeks or months. I merely imply that the directors take an interest in these things.

26,370. Then the fact of the matter is that the directors say, we will consider your proposals; and the result is that some time elapses before the thing is done?—There may be a certain time, but not a time that would prejudice the purchase or the carrying out of the works.

26,371. (*Mr. Lewis.*) I suppose really the course of procedure would be this, that you would discuss matters generally with your engineers, you would talk over matters of policy, and your engineers then understand the views of the directors, and the directors understand the views of the engineers, and then the recommendation comes up in a form which the directors can agree to?—You have put it admirably; that is just it.

26,371a. (*Chairman.*) I suppose your engineer has never done such a thing as suggest you should go to Wales for a supply?—No. I am afraid we should lose our confidence in him to a very great extent, if he did.

The witness withdrew.

[Adjourned till Monday next at 12 o'clock.]

FIFTY-THIRD DAY.

Monday, February 20th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
Sir JOHN EDWARD DORINGTON, Bart., M.P.
Sir GEORGE BARCLAY BRUCE, Kt., C.E.
ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
HENRY WILLIAM CRIPPS, Esq., Q.C.
ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

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Mr. FREDERICK TENDRON recalled, further examined.

26,372. (*Chairman.*) Have you any correction to make, Mr. Tendron?—I wish to give you, my Lord, the precise figures of the back dividends. At Question 26,339 I answered from memory and incorrectly. A question was put to me about back dividends, and I answered above a million. But the total is 636,650*l.*, of which 12,705*l.* is on the C. shares, and 1,000*l.* on the D. shares.

26,373. And the rest on the A. ?—The rest on the A. ; and the total is to the 31st March 1898.

26,374. Now, I believe, you have some returns to put in ?—Yes.

26,375. First, there is a return as to your works and supply?—Yes.

26,376. That contains a table showing the average daily supply of water and other details?—Yes.

26,377. It also gives particulars of your pumping and other mains?—Yes.

26,378. And a description of your engines and other works. Will you kindly hand that return in ?—Yes.

(*Handing in Return. See Appendix R., 1.*)

26,379. Have you also a return showing the distribution of the capital expenditure of the company?—Yes.

(*The witness handed in Return. See Appendix R., 2.*)

26,380. Have you also a financial return giving the number of officers, the ordinary stock, and the debenture stock ?—Yes, I put that in.

(*The witness handed in Return. See Appendix R., 3.*)

26,381. Will you also put in the estimates of your future expenditure?—Yes.

(*The witness handed in Estimates. (See Appendix R., 4.)*)

26,382. Here we get into that old difficulty about the population?—May I make a statement, my Lord. I have summarised the whole, and I think I can make it clear.

(*Chairman.*) Very well.

26,383-4. (*Major-General Scott.*) Will Mr. Hunter give evidence with reference to these estimates?—I have gone into these estimates, Major-General Scott, and I am prepared to deal with the estimates.

26,385. Very well?—Then, my Lord, taking the basis of population at 22·3.

26,386. (*Chairman.*) What is 22·3 please?—22·3 per decade. That was the return furnished by the Grand Junction Company to the Balfour Commission. Taking

that with the figure of 35 gallons a head, and a maximum of 42·7 with 100 million gallons passing over Teddington Weir, and the whole on the basis of 1898, No. 1 estimate, gives you a total of 1,063,420*l.* for the cost.

26,387. What figure did you say?—1,063,420*l.*

26,388-9. (*Major-General Scott.*) On what ground do you take 100 million gallons over Teddington Weir?—Because Mr. Hunter's evidence before the Royal Commission was in favour of the 100 million gallons, and, therefore, he has made one of his estimates on that basis. Now I will give you immediately afterwards, if you will allow me to, the amount on the 200 million gallons. The difference between the 100 million and 200 million gallons only affects the additional storage. It does not affect the other figures. For 200 million gallons, the same daily supply of 35 gallons per head, with a maximum of 42·7, the cost would be 1,126,900*l.* Now that is the No. 1 estimate completed.

26,390. (*Chairman.*) That figure assumes a decennial increase of population of how much?—22·3, which would make a population in the Grand Junction district in 1937 of 920,800.

26,391. 920,800?—Yes. Then, taking the same population, but with a daily supply per head of 45 gallons, with a maximum of 54·9 for the maximum month, the cost would be 1,387,620*l.* But with the 200 million gallons minimum over Teddington Weir for storage, it would be 1,609,800*l.*

26,392. (*Mr. De Bock Porter.*) The 22·3 is your actual experience as regards population, is it not?—Excuse me. That was the experience we had from 1881 to 1891. I am now going to put in the estimate of cost on the real increase of population from 1887 to 1897.

26,393. (*Chairman.*) How have you ascertained that increase between 1887 and 1897?—From the Registrar-General's returns.

26,394. The Registrar-General does not give the returns of population, does he?—Excuse me, my Lord, I should have said the Water Examiner's returns.

26,395. Those are the water companies' returns?—They are, and we get at those figures as correctly as we can.

26,396. That is, you take the number of houses supplied and you multiply by some figure?—As far as I can give you the information, it is taken from the Census and amended year by year subsequently.

26,397. But the Census, you know, deals with the population only in 1891. How can you get the population in 1897? Do tell me the process you have followed. Do you count the number of houses you supply?—Yes.

26,398. What do you multiply that number of houses by in order to get the assumed population of persons supplied with water; what figure do you take?—6·4.

26,399. That is a smaller figure than we have had yet. In that way you get the population, do you, both in 1887 and 1897?—In that way we get the figures that we furnish the Water Examiner with each year. Yes, my Lord, that is the way we got at it from 1887 to 1897.

26,400. What do you say that these figures show as the decennial increase between 1887 and 1897?—13 per cent. I will just interpolate a remark, if you will allow me, that I worked the thing roughly out in gallons of water, and I found that the gallons we actually supplied in one year—

26,401. What is the relation between the population and gallons of water?—It is that one year with another we find that we have about the same number of gallons per house average, and we find like that that the population would be about the same. We know that we pump so many million gallons in the year, and if you take the number that we pumped in 1887, and the number that we pumped in 1897, and take the proportion out, it will work pretty much as those figures work out for population.

26,402. (*Major-General Scott.*) I should like to take you to estimate No. 1 again, please?—May I finish my statement, because if you will allow me, with the basis of 13 per cent., then I can answer any questions that are put to me upon the basis of 13 per cent.

26,403. (*Chairman.*) That is 13 per cent. decennial increase of population?—Yes, with 45 gallons per head.

26,404. We have not yet got it at 35 gallons a head?—No, my Lord, because in that case we are quite prepared to give what we estimate we are likely to have to give; and you want real figures as far as we can give—45 gallons a head with a maximum of 54·9. The total cost, including Staines, would be 958,500*l.* Now I can answer your question, Major-General.

26,405. (*Major-General Scott.*) Have you included in your estimates anything in respect of the Staines storage scheme?—Yes.

26,406. How much?—Each estimate includes 400,000*l.* in respect of the Staines scheme.

26,407. I think the whole cost of the Staines reservoir as at present sanctioned is about 1,250,000*l.*, is it not?—That is the case.

26,408. So that that 400,000*l.* is the third of that estimate?—We expect to raise the money a little cheaper, and therefore we shall get a certain amount of premium; and, not only that, as far as we can judge, we shall not spend the whole 1,250,000*l.*

26,409. Then the conditions of that storage are a flow over Teddington Weir not of 100 millions?—No, of 200 millions.

26,410. I thought you said that these estimates were based on a flow of 100 millions over Teddington Weir?—The estimates have been worked out on both bases. Four million gallons additional daily supply is the additional quantity that would be required on the basis of 100 million gallons a day passing over—84,520*l.*—but, by making the storage sufficient for 200 million gallons to pass over, the cost of that storage would be 148,000*l.*

26,411. Surely is not that 4 million gallons additional daily supply the difference between 11 million gallons which you get as your share of the Staines Reservoir Scheme and the 16 million gallons which is the surplus over the 24½ millions?—Yes.

26,412. You will see you are entitled to get now, without storage conditions, 24 millions?—24½.

26,413. 24½ millions?—Yes.

26,414. The difference is between 40 and 24?—16 millions, yes.

26,415. And by the scheme as at present arranged you are entitled to get from the storage at Staines about 11 millions, is it not?—11½ millions.

26,415. Evidently this 16 millions is in excess of that supply to the extent of about 4 million gallons, is it not?—Yes.

26,417. Then I take it that you have to provide for that 4 million gallons in the last item of that estimate?—Yes.

26,418. It has nothing to do with the 200 million gallons over Teddington Weir?—Yes, that provides for allowing 200 million gallons to pass over Teddington Weir up to the amount of this 4 millions, or rather that is based upon the 100 millions passing over, and if you have 200 millions passing over, you would require more reservoir accommodation to get that 4 millions, and therefore the cost would be 148,000*l.* instead of 84,500*l.* These supplementary figures are not contained in the letters I have put in.

26,419. You have given a figure of 400,000*l.* for your contribution to the Staines Reservoir Scheme?—Yes.

26,420. And that is on the basis of 200 million gallons over Teddington Weir?—Decidedly, we point to that.

26,421-2. Exactly. But I understood you to say that these estimates were based on 100 million gallons over Teddington Weir?—The 400,000*l.* is on 200 millions passing over, and the 84,000*l.* is only on 100 million gallons. That is the fresh estimate that was furnished by Mr. Hunter, in accordance with the evidence he gave, that 100 million gallons passing over Teddington Weir was sufficient. But as that is a matter of opinion, he has sent in a further calculation, showing what the cost would be if the whole is on the basis of 200 million gallons, and the total figure as thus given is 1,126,900*l.*

26,423. It seems to me, that mixing up two conditions as regards the flow over Teddington Weir in one estimate is a most extraordinary arrangement?—It was the desire not to complicate it—to make it as simple as possible.

26,424. It does complicate it?—It may not have succeeded. Mr. Hunter felt that you might not accept the 100 millions, but he did not know; you might have been convinced that 100 millions is sufficient; and therefore he drew out his estimate like that; and, in case you were not satisfied with the 100 millions, then he has given you the additional figure that would be involved in making it 200 million gallons a day over Teddington Weir.

26,425. (*Chairman.*) How do you get the figure 1,126,900*l.*?—If you take the difference between 148,000*l.* and 84,520*l.*, and if you add the difference between the two to the 1,063,000*l.*, you will get 1,126,900*l.*

26,426. (*Mr. De Bock Porter.*) Does the 1,126,900*l.* include the whole cost of the works which are necessary for the utilisation of your share in the Staines Reservoir Scheme?—Except distribution works, which, with mains and meters, is taken at 400,000*l.*

26,427. (*Chairman.*) Mains and distributing works, meters, &c.?—Forty years at 10,000*l.* a year.

26,428. (*Mr. De Bock Porter.*) Then it does include the expense?—Not the 400,000*l.*, excuse me.

26,429. Does the estimate of the whole 1,126,900*l.* include that expenditure?—Yes, it does.

26,430. (*Major-General Scott.*) This estimate assumes, I think, that you have a right to abstract 24 million gallons a day without any storage conditions whatever, does it not?—Yes.

26,431. Now, on the assumption that the whole supply of the companies is put under storage conditions, the same as the Staines Reservoir Scheme is now, can you say what the additional expenditure would be?—We are opposed to it, and, therefore, we have not prepared an estimate of what the cost would be.

26,432. We might have to consider such a contingency, amongst other things?—Mr. Hunter will prepare you such a statement; we did not wish to add to the figures that are already sent in.

26,433. At any rate, that is not included?—That is not included.

26,434. I observe that the cost per million gallons of daily supply in this estimate which you present to us is 66,437*l.*?—I have not worked out that figure.

26,435. Perhaps you will take that from me?—I will take it from you, certainly.

26,436. And the capital you employ at the present time being 1,778,460*l.* for the maximum daily supply

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of 23,430,000, I make out that the cost of that per million gallons of daily supply is 75,600*l.*?—I take those figures also.

26,437. So that the cost of your present supply, which is not a storage supply (you understand what I mean, it does not depend upon storage), is in excess considerably of the cost of the supply of the future, which is a storage supply?—Yes; but you have to bear in mind that we have a certain amount of storage supply, and that we have a very big reservoir for filtered water, and that we have an enormous arrangement of pumping and mains, and it is natural that the additional supply would not be as expensive.

26,438. My impression is, that at present it ought to be more expensive, that if you have to derive your water from a storage system which you have to build, and you have to deliver the water to a greater distance, and probably pump to a greater height, that your future supply ought to be in excess per unit of supply, over what your present supply is; that is my impression?—I look upon it that the prime cost, that is to say, of the construction of the reservoirs and works, may be less (because it is a joint matter and on a very big scale) than the works for a single company; and then, again, I think that the additional works for distribution, having all the system complete, would be less.

26,439. (Mr. Pember.) May I venture to ask whether you are quite sure that that 1,778,000*l.* does not contain capital which has been raised for works that are still in progress?—The 1,778,000*l.* that General Scott gave does include a certain amount, but it is not large enough to seriously invalidate the figures.

26,440. (Mr. Mellor.) Will you tell me roughly about how much?—I should say that possibly of that there might be 40,000*l.* or 50,000*l.*

26,441. (Chairman.) For works in progress?—For works in progress.

26,442. (Major-General Scott.) That is the amount given, I may say, in Mr. Lass' tables?—It is quite right—the figure is correct.

26,443. It is under the head of total capital employed?—Yes, it is correct, 1,786,552*l.*

26,444. 1,778,000*l.*, he has got it here?—I think that would be six months earlier than my figures.

26,445. At any rate, taking the figures roundly, they are not far out?—They are quite correct enough for practical purposes.

26,446. (Mr. H. W. Cripps.) Could you tell me a figure—I do not see it here, and I have had it from some of the other companies—what is the amount that you divide among your directors; what is the amount that you set aside for your board?—2,500*l.* a year.

26,447. And that is distributed among those who attend in the ordinary way?—There is a fee to the chairman, and the balance is divided according to the attendances.

26,448. (Mr. Mellor.) How many directors have you?—Ten.

26,449. (Chairman.) I do not think in the figures you have given us so far, you have given us the estimates of the population you estimate you will have in 1937?—By the 22·3 increase of population 920,800; by the 13 per cent. decennial increase 649,574.

26,450. Where do you expect your increase to take place in your district?—We expect a large increase in the country district, which may be more or less profitable. But we also expect a large increase, if you refer to rental, in the district of London that we supply. I wish you would allow me to give you a case in point.

26,451. Pray do so?—There is a street called Mount Street, Grosvenor Square, and the net rateable value of that in 1885 was 16,000*l.*, and the rental the water company received was 840*l.* In 1898 the rateable value had increased, by improved buildings, to 28,824*l.*, and the rental to the company to 1,197*l.*; but I want particularly to call your attention to this, that it is not merely the improvement in the value of the premises and the rental to the company, without the company giving something in return. Now, in 1885 we had 127 supplies—

26,452. Where?—In this particular place, Mount Street. There were 279 w.c.'s and eight baths; but in 1898, although there were only 62 supplies then,

owing to larger buildings having taken the place of the small ones, the number of w.c.'s had increased to 355 (and there is a tremendous consumption of water in w.c.'s) and 117 baths; an increase from 8 to 117 baths. That involves another enormous consumption of water.

26,453. (Mr. Mellor.) You have a vestry hall in that street, have you not?—Yes. We suffer for a time while the improvements are going on; we get no rates at all while they are pulling the houses down.

26,454. (Mr. Balfour Browne.) Baths are not paid for on rateable value, but separately?—There is a certain charge for baths, but you do not suppose that that is a very brilliant return. There is an enormous amount of water used in flats and clubs and other things. When they are pulling down houses, if you go through our district, you will see improvements in every direction, and that is where the increased rental will come in.

26,455. (Chairman.) You have given me the population you expect to have in 1937?—I have.

26,456. I think it would be convenient that I should just get the figures of your available water. There are 24½ millions from the Thames that you have now?—Yes.

26,457. Your share of the Staines Reservoir Scheme is 11,666,666?—Yes.

26,458. That makes a total of 36,166,666 gallons a day?—Yes.

26,459. And with the consent of the Local Government Board you can get an additional 3,333,334?—That is so.

26,460. Making 39,500,000 gallons a day?—Yes.

26,461. Now that is enough to give nearly 40 gallons per head per day to your estimated population of 920,800 people?—Yes.

26,462. Have you at all calculated what the population would be if you take Lord Balfour's average figure of 18·2 decennial increase?—I do not think that the precise figure has been worked out, and we were rather afraid of putting in further tables, but it shall be worked out for you, if you like, and furnished to your secretary.

(Chairman.) There seems to be much vagueness about these other figures.

26,463. (Major-General Scott.) Can you ascertain what the absolute Census figures were in 1881 and 1891 of your own area—I mean the area that you are supplying now, and will probably supply in the future?—I do not see how it is possible for us to do so. We can only go to the returns that are officially made. What else are we to do? Fancy having to make a census!

26,464. There are the Registrar General's Returns?—Even the figures of a census may be called in question.

(Major-General Scott.) We do not want to go into that.

(Mr. Pember.) Is not the real difficulty that the Census area is not the same as the area of the water companies.

(Mr. Balfour Browne.) It requires a calculation from the Census returns; we have done it in each of these districts.

(Major-General Scott.) Personally, I should rather like to see it.

(Mr. Balfour Browne.) Certainly, I will put it in, subject to it being approved.

(Mr. Pember.) I shall be very glad to see it.

(Mr. Balfour Browne.) We will hand it in, and I will let you have a copy.

(Mr. H. W. Cripps.) Have you it separately for the supply of each company, or generally?

(Mr. Balfour Browne.) For each of the companies.

26,465. (Mr. De Bock Porter.) In your financial return is shown the gross and net profits of the undertaking. Can you explain the very large increase there is in the gross and net receipts between 1896 and 1897. The difference between 1896 and 1897 is 6,000*l.*, both in gross and net, a larger increase than for any year, I think, back to 1881?—There was nothing exceptional. It was the general increase in supplies.

See
26.

(*Mr. De Bock Porter.*) In the years preceding, I see the net does not vary much more than 1,000*l.*, but here it jumps up by 6,000*l.*

(*Mr. Pember.*) There is a large jump between 1879 and 1880.

(*Witness.*) That is the case, occasionally.

26,466. (*Mr. Lewis.*) Would the new buildings in Mayfair produce that difference, do you think?—In various districts, in fact, it must be so; we did not raise our rates in any way. We certainly are very particular now. We know that our expenses are constantly increasing, and our officials do their very best to find out where there are extra supplies, and where people ought to pay for them, and there is no doubt that the vigilance of our officials is improving our returns. We are constantly pressing them in that direction.

(*Mr. Pember.*) That is the way in which such an increase as that has been made.

(*Mr. De Bock Porter.*) But this is 6,000*l.*

(*Mr. Pember.*) It is not quite that, and there are two or three in earlier times pretty nearly as large. This is only 5,800*l.*

(*Mr. De Bock Porter.*) 5,400*l.*

(*Mr. Pember.*) 5,400*l.*, and I think there has been almost as great a one.

(*Witness.*) Really it is 5,800*l.* as nearly as possible.

26,467. (*Mr. De Bock Porter.*) I see there is a statement in the last column, "amount expended out of profits for "extraordinary purposes, 11,800*l.*?"—Yes.

26,468. Was that owing to its being an exceptionally good year?—No. These extraordinary expenses are really matters of great importance to us. Parliamentary expenses are sometimes very heavy. In fact, we wish our shareholders to see the normal receipts, the normal expenditure, and besides that, any special expenditure that we have. Therefore we put it in a separate column. The parliamentary expenses are very heavy. Then we had very heavy expenses in connexion with the frost, both direct expenditure and also the work that we undertook of deepening the mains. We have lowered more than 80 miles of mains, and that has involved a very heavy cost, of which we have paid two-thirds out of revenue. They are partly included in this. Then in addition to that, a totally exceptional expenditure, and one entirely for the future, is our proportion of expenditure in connexion with Staines. Altogether, as you remarked, in that year it came to 11,800*l.*

26,469. (*Mr. H. W. Cripps.*) Which year was that?—In the year 1897. In 1898 it is very satisfactory to us to find that it was only 7,403*l.*

26,470. Are these all Parliamentary expenses?—No, Parliamentary expenses and expenses in connexion with Staines, and the balance on deepening the mains. Now, it is most satisfactory to our company to find that we have got to the end of that important work; and we have to look to that surplus that I referred to the other day to meet the Staines expenditure, which is the only exceptional expenditure we expect now with the exception of our proportion naturally of Parliamentary expenses whenever they are incurred, or of a Commission like this.

26,471. Have you your Parliamentary expenses entered separately from the others?—Separately from the other companies.

26,472. But there are other items?—Yes, we state them separately.

26,473. How much do you yourselves have to contribute to Parliamentary expenses, either of your own or of the general expenditure?—There is an arrangement between the companies that, where there is joint action—

26,474. I do not care about the arrangement. I want to know if you will tell me how much it does cost you yearly?—The average for Parliamentary expenses for the 19 years? Shall I give it to you?

26,475. Nineteen years would be going back very far?—How many years would you like me to take?

26,476. Take the last five years?—It has been a little over 1,000*l.* a year.

26,477. The extraordinary expenses in this return to which your attention has been called comes altogether, I believe, to 52,897*l.*, does it not?—I make it 60,300*l.*

altogether. I fancy that you have taken that figure without the 7,403*l.* expended in 1898. I think that will account for the difference.

26,478. (*Mr. De Bock Porter.*) What are the gross and net for 1898?—The gross for 1898 was 117,146*l.*; the net, 104,746*l.*; special expenditure, 7,403*l.*

26,479. (*Chairman.*) Can you split up that column of extraordinary expenditure into its items?—Yes.

26,480. Parliamentary expenses, for instance; how much?—Parliamentary expenses during the period, 12,947*l.*

26,481. Repairs and renewals?—2,201*l.*

26,482. Frost?—20,358*l.*

26,483. Lowering mains?—19,843*l.*

26,484. Staines reservoir?—2,416*l.*

26,485. Assessment appeals?—2,535*l.*

26,486. I do not know that it is very material to go into the different figures that you gave Lord Balfour's Commission and Sir Joseph Pease's Committee. Can you give any short explanation of the difference in your estimates?—The explanation that has been given is that one dealt with average, and the other maximum, supply. That is the short explanation.

26,487. That is, before Lord Balfour's Commission, you took the average daily supply, and before Sir Joseph Pease's Committee you took the maximum; is that it?—Because we had to provide for the maximum.

26,488. You write off nothing for depreciation?—No.

26,489. On the other hand, do you keep your works efficient by annual expenditure out of revenue?—Very efficient.

26,490. And although you write off nothing for depreciation, do you add anything for appreciation to your land?—No. I should like to give you an instance. We bought 70 acres of land, and have sold a portion at almost the cost of the whole, so much has land improved in value.

26,491. Where were those 70 acres?—At Hampton. I thought it was only fair—I must say this in justice to the auditor, because a great deal has been said about Mr. Stoneham—I thought it was only fair and just that we should have interest on that money as we had laid out of it so long. Mr. Stoneham objected, and so we gave it up.

26,492. When did you buy?—I should think it must have been about 10 years ago.

26,493. And when did you sell?—Two years ago.

26,494. Then, in those eight years, what was the difference in the value of land?—I think the difference was about 500*l.* an acre. It was a cheap purchase; there is no doubt about it; it was very cheap.

26,495. (*Mr. Mellor.*) I suppose you were getting rent all this time, were you not?—No, we had nothing out of it; but Mr. Stoneham is very particular.

26,496. (*Major-General Scott.*) For what purpose did you buy that land?—We thought, before the Staines reservoir was decided upon, that it might be desirable to have another large reservoir there. That is really why we bought it.

26,496a. (*Chairman.*) At Hampton?—At Hampton, because we are short of storage reservoirs; that is a weakness of ours.

26,497. (*Major-General Scott.*) You have less subsidence storage than any other company?—We had; but do not forget that we have a large reservoir of over 50 million gallons of filtered water, and of course that is practically storage.

26,498. With reference to the evidence we have had very recently about the use of flood water for filtration purposes, do you agree that it is desirable to cause that flood water to subside before applying it to the filters?—It is a question of cost. It costs us more for filtration. If we have not as much subsidence reservoir the filter beds have to be cleaned more frequently, and that is a heavy cost.

26,499. Do you propose to utilise this land at Hampton at any time for the purpose of subsidence reservoirs?—Certainly not. Seeing that we shall have enormous storage at Staines. That land we hold in reserve, possibly for more filter beds.

26,500. But let me remind you that the major portion of the water from Staines will come down without any

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subsidence whatever?—Then it is a case of more filter beds. I prefer more filter beds to the cost of storage. We have a very large filtration area—larger than any other company. Our former engineer went in for that policy.

26,501. (Mr. Lewis.) In what way did you deal with the proceeds of the sale of the land?—Wrote it off capital cost of works—the whole of it.

26,502. (Mr. Mellor.) Where is your principal intake?—At Hampton.

26,503. I suppose you take samples of water from time to time in order to ascertain the condition of the water?—The truth is, that men who are accustomed to deal with that go far more by their eye than they do by the actual samples. The samples are taken daily by Professors Crookes and Dewar, and the moment there is anything that is not quite satisfactory, they come down upon us without any consideration whatever.

26,504. I want to know, do you, in fact, take samples?—No, we do not ourselves.

26,505. You do not at all?—No.

26,506. Then perhaps you can tell me this. Do you find any deposit in the mains?—I have never heard of any.

26,507. Never heard of any at all?—There might be a slight deposit in a main at some time or another—in what is called a blind main—a dead end—but we are avoiding dead ends as much as possible.

26,508. That is to say, your object is to keep a continuous circulation?—Yes.

26,509. Have you found at all from experiments, or in any way, that the water is purer the further you go from your intake?—We spent money out of revenue and we were willing to spend a large sum out of capital to bring the water from Dawney, because it was so much purer than nearer the intake.

26,510. That is not quite what I meant. I mean to say, do you find that the water becomes purer from going into circulation and passing through the mains?—You ask, do we find the water getting purer. I should not think so. I do not notice that difference between the assays of Crookes and Dewar from the pumping wells and at the stand pipes.

26,511. In your opinion, at all events, the difference is infinitesimal if there is any?—Yes, not material.

26,512. (Chairman.) I do not know whether I have derived a wrong impression, but I certainly derived the impression from Professor Dewar's evidence, that if anything, the passage along the mains would make it worse?—Yes, I do not think it would improve it.

26,513. (Major-General Scott.) Is it not the fact, that you may find you have 50 microbes per cubic centimetre at the filter after filtration, and three or four thousand from that same water in London?—No, not such a difference as that. I believe they breed anywhere and everywhere, and if we could only make the people of London take the water from the rising mains instead of from cisterns, they would have splendid water; it would have that great advantage.

26,514. Is it not the fact that there is a liability to very enormous increase during circulation?—I should not think so, because if you look at those returns furnished you, it is a most exceptional thing to find a very large increase—the difference between the well and the supply place.

26,515. Is it not the fact that the Kent water, which is one of the purest probably of all, and the most sterile, after being left exposed to the air may acquire a very large number of microbes? Are you aware of that?—I am aware of this, that artificial water made from New River water was once found to breed 250,000 microbes to the cubic centimetre, and those are artificial waters that some people constantly drink in preference to the calumniated London water.

26,516. (Chairman.) We know what your water rates are; are they uniform throughout your district?—Yes.

26,517. I thought the Bishop of London had got some advantage?—That is perfectly true. The Church made a good bargain there—15 per cent. rebate.

26,518. On the Bishop of London's estates?—Yes.

26,519. Is that an extensive estate?—The rebate costs us about 4,000*l.* a year.

26,520. (Sir John Dorington.) Is that under statute or by agreement?—Statute.

26,521. (Chairman.) Who lives on the Bishop of London's estate?—A great many different people—different classes of people. They are very good houses.

26,522. They are not exclusively ecclesiastical persons?—Oh dear me, no—Westbourne Terrace, I am told.

26,523. (Mr. De Bock Porter.) I believe when that estate was laid out for building, when the Act of Parliament was obtained which sanctioned the building, a special arrangement was made with your company that the rates should not exceed so much, or that there should be a rebate?—Yes, that was the case—that there should be a rebate.

26,524. It was voluntarily entered into by your company?—No doubt we had our interest in it. We should not have done it without. There must have been some consideration of some kind.

26,525. (Chairman.) Was there any other company that would have stepped in if you had not?—I am not aware of that.

(Mr. Pember.) It is section 4 of the Grand Junction Waterworks Act, 1856.

26,526. (Chairman.) I take it, it is by statute. There are, I believe, a number of differences of detail between you and the County Council witnesses?—They are not important. I think it is wonderful they got out their figures as correctly as they did. Where these mistakes were made was in taking the half-year in which the dividend appeared as belonging to that half-year, whereas in truth it belonged to the half-year before, and that set their figures wrong. They are not important figures.

26,527. Then I need not go through them?—I do not think it is at all necessary, with the single exception of this matter of writing off 159,473*l.* for obsolete works. Naturally, any one reading the evidence given by Mr. Lee would think it was written off by him. That is not the case. I have referred to the company's books. No less than 121,106*l.* of that had been written off at different dates by the company for obsolete works. It was done by the company—not by Parliament.

26,528. I am not able to follow you quite. What statement are you referring to, to begin with?—I am referring to the statement of Mr. Gomme, in the summary table which he put in at Question 3731, in which he says Parliament reduced the capital claimed by the company. In connexion with that I have a table I should like to put in.

26,529. Perhaps you had better put it in. It is a table produced before the Committee of 1852, is it?—Yes.

(Witness handed in Table. See Appendix R, 5.)

26,530. Was Mr. Lee the agent of the companies?—I understand so.

(Mr. Balfour Browne.) The accountant.

26,531. (Mr. De Bock Porter.) Is your company the only one that made voluntary deductions for obsolete works from capital?—I cannot speak for the other companies.

26,532. (Mr. Mellor.) How do you write off capital for obsolete works; what is the process?—Deduct it from the expenditure.

26,533. (Chairman.) In 1852, your system was changed from a system of charging by agreement to a system of charging upon annual value?—I am told by the secretary, there had been a previous charge on value. That was the year when the question, I suppose, was settled as to the amount of capital on which there was to be a maximum percentage.

26,534. (Mr. Lewis.) That is the only way, as I understand it, in which you can do it—by writing off the capital from the capital expenditure?—From the capital expenditure.

26,535. Setting it off rather against capital expenditure?—No; it does not deal with capital received at all; it only deals with capital expended. But the company had already written off 121,000*l.*, so there only remained 38,000*l.* to be agreed between the company and Parliament as the amount to be written off, and that I saw done in the usual book keeping way of a journal entry, in conformity with this evidence,

26,536. (*Chairman.*) I have not yet mastered this point. In 1852 you voluntarily, as you say, wrote off from your capital a certain amount for works?—No, excuse me, we had written it off far back—it had been written off at various dates in all those years; it had been written off on the instructions of the Board.

(*Mr. Balfour Browne.*) There are three separate sums you will find on the fourth column of this table apparently.

26,537. (*Chairman to Witness.*) From time to time written off, you say?—Yes.

26,538. Is that so?—When certain works were abandoned, the cost was written off; it is not as if Parliament found us in default, or we had to.

26,539. (*Mr. De Bock Porter.*) But that practice has not obtained at the present time?—Because we have no abandoned works; our works are all in good order—even our old engines do splendid work.

26,540. (*Chairman.*) Have you abandoned nothing since 1852?—We have had no reason to abandon anything. If we sell any property it is deducted.

26,541. I thought you had abandoned an intake somewhere nearer London, and gone up to Hampton.

(*Mr. Balfour Browne.*) Yes, from Kew you went to Hampton in 1855.

(*Witness.*) I am told that that was all taken into consideration, Mr. Balfour Browne.

(*Chairman.*) It does not appear in this table.

(*Mr. Balfour Browne.*) Just after 1852; it was in 1855 it was done.

26,542. (*Chairman.*) I see that, according to Mr. Lee's evidence given in 1852, those sums of 53,815*l.* and 35,228*l.* are the cost of the works abandoned at Paddington to go to Kew?—Yes.

26,543. And then from Kew you went to Hampton?—The point is, that there were no works abandoned at Kew. The works at Kew are all in operation; it is simply a different intake. The cost of the intake is nothing like as serious as the cost of works.

26,544. The intake has been abandoned?—The intake is not used, but at all events it is available if it were wanted.

26,545. But you have no longer the right to take water there?—We should not take water.

26,546. By statute you are prohibited from taking water at Kew, are you not?—We should not think of taking water from Kew.

26,547. I do not ask you whether you would think of it; I ask you whether you are not prohibited from taking water?—That is a legal question.

(*Mr. Pember.*) I do not know.

(*Witness.*) Even the counsel cannot answer, so I cannot answer. I was going to give you a brief explanation, if you like, of how the capital from 331,000*l.* became 400,000*l.* We issued certain shares at a discount, and according to the table I have just handed in, from 1810 to 1852 between Total Net Income and "Dividend" given to proprietors, you will see that there is a difference of about 84,000*l.* That 84,000*l.* belonged to the proprietors, and really could have been distributed, but 69,000*l.* of that was written off to make up the discount on those shares that had been issued under par; and so that wrote up the 331,000*l.* to 400,000*l.*—a perfectly proper operation.

26,548. (*Mr. Mellor.*) Have you got any special power to issue shares at a discount?—We must have had, or we should not have done it. It was many many years ago—it is rather hard, you know, that we should be blamed.

26,549. I am not seeking to blame you in any way; I am only making an inquiry?—I am surprised to find that everything has been so regularly done, because in such a long period as that, if you had found two or three things wrong one would not have been very surprised.

26,550. (*Mr. Lewis.*) I see you are still issuing certain shares?—We have still the power to issue some "D" shares, and also some debenture stock.

26,551. (*Mr. Mellor.*) At a discount?—No, it commands a long premium.

26,552. If you ever had power, so far as you know—I mean if you have had power—to issue shares at a discount, when did that power cease—that is what I

want to know?—The power has not been taken away, I am told by the solicitor.

26,553. (*Sir George Bruce.*) Did it ever exist?—Evidently.

(*Sir George Bruce.*) I doubt it very much.

(*Chairman.*) Let us see the section of the Act of Parliament that enabled you to issue shares at a discount.

(*Mr. Pember.*) I do not think there would be any statement in any Act on the point.

(*Mr. De Bock Porter.*) Would the price of issue be absolutely at the discretion of the directors at the time being?

(*Mr. Pember.*) That is a point of law which I did know once, but I do not know now—as to how far a company which is not restricted by any special Act can issue shares at a discount. I rather think it can. I am told you cannot; you may take it that you cannot.

26,554. (*Mr. Lewis.*) Referring to that question which I put just now, I find that your "D" capital was increased last year by 30,000*l.*?—We issued 30,000*l.* last year.

26,555. Was that at par?—No. It was an unfortunately bad time, and the capital only fetched a little over 95*l.* for the 50*l.* share, but we have sold 40,000*l.* of "D" shares by auction at an average of over 102*l.* for the 50*l.* shares.

26,556. Then do you carry the premium?—To capital—yes.

26,557. To a separate account—that is, the amount representing the premiums?—Yes, and it is used solely for capital purposes.

26,558. And does this carry the full dividend of 7 per cent.?—It carries the full dividend of 7 per cent., which really means to the purchaser at 102, a little under 3*½*.

26,559. Can you increase that still further?—Fortunately we have still 30,000*l.* we can issue without going to Parliament. It has been the salvation of this Company to a certain extent to have a good amount of capital that it could issue without going to Parliament, and being fettered with that terrible sinking fund. That is the execration of the companies.

26,560. (*Chairman.*) Do you say Mr. Haward has made a mistake in the amount of capital you have raised from 1872 to 1897. If you do not think that material, I will not go into it?—I do not think it is material—there were terminable bonds paid off; perhaps he was not aware of it.

26,561. Your expenses in management have been attacked?—Yes.

26,562. Have you got a table showing what those have been?—Yes. I cannot see any connexion between the amounts of dividends we pay and the salaries we pay the officers. I think the main difference of fluctuation arises in superannuation. Sometimes we have had officers a long time in our service, and I am thankful to say we always deal liberally with our staff in matters of superannuation. We had a very heavy charge for some years for the superannuation of a secretary who had served us for 50 years in one form or another. Sometimes these die out, and then there is a diminution. There is no extravagance, and I hope there is no meanness.

(*Witness handed in Table. See Appendix B, 6.*)

26,563. (*Mr. Pember.*) The highest percentage, I see, was in 1885?—Yes, 8·68*l.*, and then the next in 8·93*l.* It was about that time that we pensioned on full salary this very valuable officer. May I call your attention to the question of rates, if you think it is of any importance—in our district.

26,563a. (*Chairman.*) Do you mean the quinquennial re-valuation?—Yes, I fancy it has been an attack upon the companies that we do not do anything for the increased amount that we get. If you look at these tables you will see that the increase is very small.

26,564. In the first place will you put in the tables?—Yes.

(*The witness handed in Tables. See Appendix B, 7 and 8.*)

26,565. The quinquennial valuation of 1891 compared with 1886, showed an increase on unaltered premises of, how much?—81,013*l.*, and a decrease of 72,648*l.* If you take the difference between the two, it makes

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Mr. F. Tendron. 8,365l., and take it at 5 per cent. as the average rate (our average rate is a little under) it would mean 400l. of increase in our rental.

26,566. What was the increase in your own rates?—2,258l.

26,567. The results are similar, I believe, in the re-valuation of 1896?—Yes.

(*Mr. Pember.*) It hardly affects the financial aspects of purchase, does it?

(*Witness.*) Your Lordship asked me, I thought, the increase in the rates we paid. Of course, it is the new premises, the improved premises, and everything else, that we are looking to.

(*Chairman.*) I think there is nothing more to ask you.

(*Mr. Balfour Browne.*) I do not think I have got anything to ask Mr. Tendron. I do not quite gather from Table 5, that Mr. Tendron has put in that it is exactly what he said. He seems to think that the Company made those deductions, but I have read the letterpress which is printed behind, and I do not think it bears out their contention. The deduction seems to have been put in, in particular years by Mr. Lee in 1852, and not to have been made by the Company.

(*Witness.*) I quite agree with you, and I read it in that way till I referred to the Company's books and found the amounts had been actually written off. It must have been his figurative way of speaking.

26,568. He says distinctly that the table was compounded by him—"I have deducted altogether."

(*Witness.*) That is what I noticed.

(*Mr. Balfour Browne.*) Yes—"I deducted the cost." However, my Lord, I am perfectly content if that goes on the notes.

(*Witness.*) You may take my assurance, I have referred to the books, and those amounts were written off long before Mr. Lee.

(*Mr. Balfour Browne.*) If you say so, I am perfectly content with that assurance.

(*Mr. Pember.*) I think that is quite compatible, if you will come to look at it. A man giving evidence says: "I have done this, that, and the other"; he does not add, which he might have added, "I did this, that, and the other because some other people did it before."

(*Mr. Balfour Browne.*) If the Chairman tells me that that is the way, I am quite content with that.

26,569. (*Chairman, to Witness.*) I am told you have not put in a return showing the number of supplies, estimated population supplied, and the rateable value of the properties supplied by the Company?—I will put that in, my Lord.

(*Witness handed in Return. See Appendix R, 9.*)

(*Mr. Balfour Browne.*) I promised—I think General Scott wanted it—the Census return for each of the districts of the companies.

(*The learned Counsel handed in Return. See Appendix F, 5.*)

(*Major-General Scott.*) I desired the population of the districts, if you understand me, which the companies supply and will supply in the future.

(*Chairman.*) The district where no other company supplies; that is what General Scott wants.

(*Mr. Balfour Browne.*) I cannot exactly do that, but the districts in which they are actually supplying. For instance, Chelsea; I have got the exact population

of Chelsea supplied according to the Census return in the Chelsea district.

(*Mr. Pember.*) Before this goes on the notes, perhaps the other side had better see it to see if we can agree.

(*Mr. Balfour Browne.*) I do not think you can possibly check it, but you shall see it, of course. I will tell you how it has been done. In each district we have taken out, according to the Census where it was made in 1896 for the purpose of the Equalisation of Rates Act, the population given by the Census in each ward in the district—we will say of the Chelsea Company. Wherever there was a ward only partly supplied we have taken out the exact number of supplies. Where it goes outside the Census altogether we have taken the number of supplies, and applied to that number of supplies the average per household given by the last Census. I will hand it to you, but I am afraid it could not be checked now.

(*Mr. Pember.*) We might just look at it, and then, if we see no objection, and I daresay we shall not, it might be put on the notes to-morrow.

(*Major-General Scott.*) Let me be clear about it. We have dealt at various times with different areas in relation to the companies. There is their parliamentary area, and we know by the evidence how very much companies overlap each other as regards their parliamentary area, and they have by their agreements arranged for some particular area for each company, which they now supply, and which we may assume they will supply in the future, and that is the area that affects the questions which, I think, we have to deal with.

(*Mr. Balfour Browne.*) That is the area Mr. Gomme has given in the table which I put in. I may say, my Lord, this has not been made for the purpose of to-day; it was made out for the Commission early, and it was sent to the Commission to your Lordship, but you did not think at that time it would be necessary to go into it.

(*Mr. Rickards.*) Can you give me the statement of the Chelsea area to-day, because we are going to give evidence to-morrow.

(*Chairman.*) Do these figures that you have just handed in bring out any different rate of increase to that which Lord Balfour's Commission took?

(*Mr. Balfour Browne.*) In some cases it is slightly different.

(*Chairman.*) Is the average different?

(*Mr. Freeman.*) I think the average is the same, but the particular parts differ.

(*Mr. Pember.*) Would it affect the 18·2?

(*Mr. Balfour Browne.*) It does, slightly.

(*Mr. Pember.*) Does it increase it or diminish it?

(*Mr. Freeman.*) If anything, it slightly diminishes it.

(*Mr. Pember.*) Very well, as I am perfectly content with 18·2, I shall not read those 70 pages.

(*Chairman.*) I should like to see clear figures for the component parts of the 18·2, but I think we must give it up.

(*Mr. Pember.*) Mr. Hunter is at your service, if you want to see him at all.

(*Chairman.*) General Scott, have you anything to ask Mr. Hunter?

(*Major-General Scott.*) Nothing, thank you.

The witness withdrew.

Mr. HARRY WILKINS, called and examined.

Mr. H. Wilkins.

26,570. (*Chairman.*) You are, I believe the secretary of the Lambeth Company?—Yes.

26,571. And you have been their secretary for five years?—Yes.

26,572. With regard to purchase, I understand your company are not willing sellers of their undertaking?—They are not.

26,573. Had you any cognisance of the negotiations with Sir Arthur Arnold?—Yes. I was present at the interview between my chairman and Sir Arthur.

26,574. I do not want to go into the details of that; but was any assent conveyed on behalf of your company, either to purchase in itself or to any particular

terms of purchase?—None at all. We simply adopted a waiting attitude, perfectly prepared to listen to any proposal Sir Arthur advanced, but not prepared to assent to purchase ourselves.

26,575. Or to any terms of purchase?—Terms were not even mentioned.

26,576. For instance, was there any assent to the arbitration under the Lands Clauses Act being abandoned?—We did not get so far as that. There was certainly no assent.

26,577. Do your company now assent to any one of the arbitration clauses that we had before, as proposed by the London County Council?—No, not to any one of them.

26,578. You claim, as I understand, arbitration upon the terms that hitherto, at any rate, have been ordinary?—Certainly, if purchase is deemed essential or desirable. Perhaps I might say that the objection taken by my company to the arbitration clauses which have been put forward by the London County Council is mainly that they are of a gambling and speculative character.

26,579. (*Mr Balfour Browne.*) Gambling?—Well, speculative, perhaps, is a better word.

26,580. (*Chairman.*) Perhaps you will explain what you mean?—What I mean is this—that under the Lands Clauses Act, which has been in operation now something like 50 years, and under which hundreds of millions of pounds worth of property have passed, we practically know where we are, but under these various arbitration clauses proposed by the London County Council, we do not know what will happen, or what view the arbitrator might take on any particular point put before him, either by ourselves or by the County Council. It might possibly tend to increase the price paid to the Company, but the probability is that it would have the contrary effect.

26,581. (*Mr. De Bock Porter.*) Would you take exception to any sale by way of annuity based upon present profits over an average term?—I take it that any sale would take place upon the basis of annuities. I presume you have something in mind, like the Birmingham scheme?

26,582. Or Mr. Banbury's scheme?—Mr. Banbury's might form the basis, but it would require some modification in point of detail.

26,583. Yes, but a scheme of that kind—of negotiation in preference to an open arbitration?—If the principles could be laid down authoritatively, I have no doubt that mere matters of detail could be arranged.

26,584. I thought, perhaps, you were in favour of arbitration under any circumstances?—No, not in any circumstances, because, if you take the Birmingham precedent for instance; the Birmingham Act, as passed, gave arbitration under the Lands Clauses Act, but the corporation and the company came to terms. I think it would be quite possible, supposing purchase were decided upon, that the company would accept the inevitable, and enter into negotiations, although I am not prepared to say whether they would, or not. But they certainly, I think, would not enter into negotiations on the basis of any of the arbitration clauses put forward by the London County Council.

26,585. (*Chairman.*) I presume you have prepared some statement of your authorised and paid-up capital?—Yes.

26,586. Have you got it in the shape of a table?—I have not.

26,586a. Is it not in your financial return that you are going to put in?—I think it will be in the financial return.

26,587. You had better put that in now, then?—Certainly.

(*The witness handed in Return. See Appendix T, 1.*)

26,588. There the totals are not brought out?—Yes, I think so, in B.

26,589. I do not see any totals there?—The totals could easily be added; it is 1,450,000l.

26,590. Perhaps you had better give us the totals; what is the total of your 10 per cent. shares?—1,043,800l.

26,591. That is all paid up?—Yes.

26,592. What is the total of your 7½ per cent. shares?—406,200l.

26,593. Is that all paid up?—That is all paid up.

26,594. What is the total of your debenture stock 4 per cent.?—350,000l.

26,595. All paid up?—Yes.

26,596. Then 3 per cent. debenture stock?—The amount authorised is 490,000l., of which 150,000l. is not paid up.

26,597. One hundred and fifty thousand pounds?—Yes; 100,000l. has been issued in January.

26,598. When was that authorised?—In 1896.

26,599. How is it that you have not issued the whole of it; is it that you could not get the money, or what?—We do not want it. The 490,000l. was authorised for

works which we anticipated would be spread over 10 years.

26,600. Has all that been issued at par, or has it been issued at a premium?—Not at par.

26,601. Is there anywhere in your return a table showing what premiums have been realised upon it?—I have it in one of my tables. On some of the 10 per cent. shares we received 11,290l. 7s. premiums. That appears in the balance sheet given in table F of the return.

26,602. The premiums are there given, are they?—Except the 3 per cent. debenture stock, which should be increased by about 2,000l.

26,603. Really it is too bad; not one of the witnesses will bring their tables up to date. There is a mass of figures put before us; then they all have to be corrected when you come to give evidence?—That is corrected up to the end of last year, if you will be content with that.

(*Mr. Pember.*) Yes, let us stop at December 31, 1898.

(*Witness.*) Of course the figures may be corrected from day to day almost.

26,604. (*Chairman.*) Then do not correct it now if you do not think it material?—I do not think it is.

26,605. You say, there is among your tables a statement showing all the premiums up to the end of 1898?—Yes.

26,606-7. (*Mr. Pember.*) Are those premiums since the law about premiums?—That is shown separately. There is 11,290l. on shares, which was a voluntary act of the company: the rest, 40,803l. on the debenture stock, was under the auction clauses.

26,608. (*Chairman.*) Is there anywhere a table showing the amount of dividend paid?—Yes, that is in Table B.

26,609. I see from that the annual dividend has been a fluctuating one rather?—It has been fluctuating in an upward direction with the exception of the years 1895 and 1896.

26,610. In 1894-95, it fell to 8½ per cent. from 9½ per cent. which it had been the year before?—Yes.

26,611. Then the next year, 1895-96, it fell to 7½ per cent.?—In 1895-96 it also fell. In 1896-97 it rose to 9½ per cent. The normal amount was then 9½ per cent. The fall was due to the expenses of the great frost of 1895, which was spread over four half-years, the bulk of it being borne in the half-year ending September 1895.

26,612. In 1897-98 you paid your maximum dividends, 10 per cent. and 7½ per cent.?—Yes.

26,613. And up to September 1898 you paid 10½ per cent. and 8 per cent.?—Yes, ½ per cent. being back dividends. I should like to supplement that by saying that in addition to that a contingency fund of 20,000l. has been built up, so that we have not divided up to the hilt.

26,614. You have now reached your maximum, and you are beginning to pay back dividends?—Exactly.

26,615. Do you regard your income as likely to increase?—Certainly.

26,616. On what grounds?—First of all large houses with extensive grounds, are giving place to smaller houses of a greater aggregate annual value.

26,617. Whereabouts is that happening?—In very many parts of the district—almost all over the district except the strictly rural parts. Take Streatham Hill for instance—Leigham Court, that was one house which is now laid out for building something like 1,600 houses on, of which about 700 are actually built, and 500 are in actual occupation. That is an example of that. Then a second point is, that owing to the scattered nature of our district, mains which at present are only partially productive have been laid down in anticipation of future water rentals coming in.

26,618. Have you any area that is not yet developed at all in your district?—There is also a large area not developed.

26,619. Whereabouts is that?—Take Esher, Claygate, West Molesey, East Molesey, Kingston, Surbiton, Merton, Malden, part of Oroydon, Streatham, Tooting, Mitcham—all the outside fringe in fact.

26,620. And you expect that those districts will be all built over?—They are becoming so, gradually.

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Mr. H. Wilkins. 26,621. Do you supply outside your statutory district?—Yes, to a small extent; that is shown in the return of the number of supplies and estimated population supplied.

26,622. You had better put in that return then?—Yes; the number of supplies outside our statutory district only amount to 218 altogether.

(*The witness handed in Return. See Appendix T. 2.*)

26,623. (*Mr. De Bock Porter.*) What is the aggregate amount of back dividends that you claim to pay?—We are quite content with the amount of the London County Council 924,000*l.* I make it a trifle more—between 924,000*l.* and 940,000*l.*

26,624. (*Mr. Lewis.*) How far back do you go?—We only claim to go back to 1848—the company was then reconstituted.

26,625. (*Mr. De Bock Porter.*) Have you formed any estimate of the number of years likely to elapse before you have paid them?—No, I have not.

26,626. The chance of the consumer getting any relief is very remote?—Our income has considerably increased of late. You will see, for instance, if you take our net profits on table D. of the financial return, that they have increased since 1891. They stood then at 122,000*l.*, and for the year ended March 1898, they stood at 145,000*l.*

26,627. And over this large area that you speak of as being likely to be productive in the future, do you expect to be able to maintain the very high rates that you charge?—Certainly. We could maintain a higher rate in those districts, because the difficulties of water supply are so great that we frequently have applications from people outside our Parliamentary area to supply them, and they are willing, practically, to pay any price; but we have not yet done so. Our rates are not at all excessive in the opinion of people desiring water.

26,628. (*Chairman.*) We will come to your rates in a moment. Your return of supplies shows, does it, on the face of it, where you are supplying outside your statutory district?—It does.

26,629. I see there are only 218 outside supplies altogether?—That is all.

26,630. And a population of 1,280 with a rateable value of 6,363*l.*?—Yes.

26,631. That will be a matter of 300*l.* a year, about, to your Company?—Rather more than that.

26,632. Between 300*l.* and 400*l.* a year?—Rather more, because one of the districts is rather a good district—Worcester Park.

26,633. (*Mr. Mellor.*) Do you supply by meter when you supply outside your own district?—No.

26,634. (*Mr. Pember.*) What district do you supply outside?—Worcester Park principally, and Chessington.

26,635. Where do they lie?—Worcester Park is in the Sutton Company's district. We went in there at the request of the inhabitants, in 1871, because the Sutton Company were then not in a position to supply, and the Sutton Company have not yet taken that district. We went into Chessington, practically, at the request of two or three people who were deprived of their water because they were dependent upon shallow wells which were condemned.

26,636. (*Sir John Dorington.*) Where does the Sutton Company get its water from—wells?—Wells.

26,637. (*Chairman.*) I am not sure that we have the figures of your parliamentary, and of your actual, area of supply in London, Surrey, and Kent; perhaps you had better give us those figures?—The parliamentary area in London is 41.25 square miles, and the area actually supplied is 24.00. In Surrey, which includes the county borough of Croydon, the parliamentary area is 55.64 square miles, and the actual area is 40.3. In the county of Kent, the parliamentary area is 6.06 square miles, and the actual area is the same. The total parliamentary area is 102.95 square miles, and the area actually supplied is 71.26 square miles.

26,638. Does that arise from the fact that other companies are supplying the rest of your area, or because you have not yet developed the whole of your area—or does it arise from both reasons?—It is partly due to both.

26,639. How much of the parliamentary area is still free for you to supply,—I mean how much of it is not supplied by other companies?—I should think about a fourth of the difference—between seven and eight square miles.

26,640. That is still open to you?—Yes, still open.

26,641. That is, you are waiting for development?—Yes.

26,642. Of course there are a certain number of houses in those seven or eight square miles?—If there are, they have got their own well supplies. Of course, some part of it will never come in being common land; the figures I have given would include commons.

26,643. (*Major-General Scott.*) What would be your total area of supply in London, do you think?—I think we may regard the London area that we are not supplying as abandoned. Take the parishes of Rotherhithe and Bermondsey which, I think, would represent somewhere about eight square miles; then you will have to allow a little for water area and for common land, I should think, about another 12 miles. Probably our area would be from 84 to 85 square miles, eventually.

26,644. (*Chairman.*) In London, Surrey, and Kent?—Yes.

26,645. Is it important that we should have the number of separate supplies in those three counties? What turns upon that?—I think there is an important point there.

26,646. Can you put it in as a table—it gets so much more conveniently on to the notes if you put it in as a table?—I have not got a table, but I have a few figures showing the increase in five years in the county of London.

26,647. What five years?—From 1891 to 1896; the increase per cent. in the number of supplies in the county of London, in those five years, was 9.56; in Surrey and Croydon, during the same five years, the supply had increased at the rate of 22.7 per cent., and in Kent the supplies had increased at the rate of 13.11 per cent., the average over the whole district being 12.53 per cent. So that the increase is proceeding at a less rapid rate, although the number of supplies is greater, in London than it is either in Surrey or in Kent. Taking out the figures for seven years to the 31st December last, the disproportion would be even greater.

26,648. You have spoken of Croydon once or twice. Have you not ceased to supply Croydon; does not Croydon now supply itself?—Not by any means. We actually supply, in the area of the Croydon Corporation 700 houses to-day.

26,649. (*Mr. Balfour Browne.*) It is in a certain circle that Croydon supplies itself?—Even in that circle, we are supplying 700 houses to-day; and last year we took 70 houses in that district, and we lost one, so that our net gain over Croydon was 69, even in their limited area.

26,650. (*Chairman.*) You mean that you are supplying houses in the same district where the Corporation are themselves actually supplying?—Yes.

26,651. Is it that you get applications from people to supply them?—Yes.

26,652. Do they prefer yours, do you mean, to the Corporation supply?—It is sometimes a question of expense. When they want water supplied they may have to have a greater length of main laid from the Croydon system. Take a new street, for instance, where a house is detached, our main may be nearer, consequently the guaranteed rent may be less in our case than it would be under the Croydon Corporation. What I mean is this, under the Waterworks Clauses Act, but perhaps your Lordship understands it now?

26,653. Yes, I quite appreciate it. But that is a new fact to me; you mean that within even the circle where the Croydon Corporation have power to supply, you are not only supplying houses but you are supplying an increasing number of houses?—Yes. Some people prefer our water, as it is softer than that of the Croydon Corporation. That is another reason.

26,654. (*Mr. De Bock Porter.*) But they prefer the Croydon charges, do they not?—By arrangement we charge the same in Croydon.

26,655. You abate your charges?—That arose in this way, it is quite a recent matter; it was alleged that

the quality of the water was the reason why the Croydon people preferred the Corporation water. We accepted the challenge, and reduced our rates to the actual rates of the Croydon Corporation, and since that time we have if anything been gaining on the Croydon Corporation, showing that it was not a question of quality but price. The question of quality was raised in 1894, and since that we have put it to the very practical test of rate.

26,656. (*Chairman.*) I should have thought it did show that it was a question of quality; the rates being the same there is nothing to choose between you except quality?—They are choosing us.

26,657. It is a question of quality?—Yes, only the Croydon Corporation have put it the other way. They have said the people preferred the Croydon water because the Croydon water was of superior quality to ours; we reduced our rates to the same rates as those of the Croydon Corporation with the result I have just mentioned.

26,658. Were your number of supplies in Croydon diminishing before you reduced the rates?—They were practically stationary.

26,659. Do you find that it is remunerative to you to supply houses in Croydon in increasing numbers at these reduced rates?—It is better to have a small rate of interest on dead capital than none at all. That is really the point. The whole thing in Croydon is a very small matter.

26,660. How many supplies have you altogether in Croydon?—In the district supplied by the Corporation, 700.

26,661. (*Mr. De Bock Porter.*) When you once supply within the Croydon area are you at liberty to go on indefinitely, or can the Croydon Corporation oust you?—No, we are on the same footing there; we have each got concurrent powers.

26,662. (*Chairman.*) It is a case of genuine competition then, is it?—We are not actually competing.

26,663. (*Mr. De Bock Porter.*) Practically?—No; the Croydon Corporation are not competing with us nor are we with them.

26,664. (*Chairman.*) I suppose these 69 houses that you have mentioned you gained last year might have been supplied by the Croydon Corporation?—No doubt, that is to say, they are within the Croydon area.

26,665. (*Mr. Lewis.*) I suppose you compete for area but not in respect of charges?—We are not anxious to increase our number of supplies in Croydon. We should not lay an extra main for an unremunerative return, for instance; we tap existing mains, because that is a profitable transaction comparatively, but we should not lay a new main at an unprofitable rate.

26,666. (*Mr. Mellor.*) Then, in point of fact, it is rather a matter of convenience for the consumer, is it not?—I do not quite follow.

26,667. I mean to say that the people who want you to supply them are people to whom your mains are convenient?—Certainly; they would not come to us if there were not some inducement.

26,668. And where there might be some difficulty in getting their supply from the Corporation?—In many cases; but I have heard that doctors have recommended their patients to transfer their supplies to the softer water.

26,669. On the ground that the Corporation water is not good?—On the ground of the chalk, purely the chalk.

26,670. (*Sir John Dorington.*) Have you any actual cases of transfer from one company to the other, that is to say, of people who were supplied by the Corporation of Croydon coming to you?—I have not any in mind at the moment. Those 69 were new houses.

26,671. (*Chairman.*) Are there any the other way—people who were supplied by you, and went to the Corporation?—Yes, there was one last year.

26,672. (*Mr. Mellor.*) Why was that, can you tell us—why did they leave you and go to the Corporation?—I think it was a builder's case; I think the builder did it.

26,673. (*Chairman.*) Then these were old premises?—Yes, but the builder had the over-hauling of the water supply; I think there was some question of that sort.

(*Sir John Dorington.*) He preferred the Corporation water.

26,674. (*Mr. De Bock Porter.*) Have you entered into any agreement not to raise your rates in the event of competition ceasing?—No, we have entered into no arrangement at all.

26,675. Then, supposing the Croydon Corporation could not go on in a particular district where you are now competing, your charges may be raised again in your discretion hereafter?—Certainly.

26,676. (*Mr. Mellor.*) Have the Corporation of Croydon objected at all to your presence there?—I do not think they can.

26,677. Have they—I do not mean can they—people very often do what they have no legal right to do; I want to know if they have done so?—Not to my knowledge.

26,678. (*Chairman.*) There is another part, I think, of your district, as we are on this subject, where you come into competition with the Southwark and Vauxhall, is there not?—Yes.

26,679. Do you charge lower rates in that part of your district?—Yes, and we have ever since the company started.

26,680. Ever since what company started?—The Lambeth Company. The charges which we now make in the parish of Lambeth are the same as those charged in the beginning of this century. I find that in the evidence of Mr. Simpson on our Act of 1848, when the charges fixed in 1834 were confirmed, he said it was not the intention of the company to increase their charges in the part of Lambeth parish which we then supplied from Brixton; and that, practically, has always been the case.

26,681. By "from Brixton," you mean by the Southwark and Vauxhall?—No, from our Brixton reservoir. The district south of Brixton Church practically is what we call our gravitation district; and in the original part of that gravitation district the rates which were framed at the beginning of this century are still in existence.

26,682. Although you have power to charge higher ones?—We have the power, and we could do so, because in some cases there is not effective competition.

26,683. (*Mr. De Bock Porter.*) Is the difference between the two rates material—is the percentage of difference large?—It is larger than it was, because the rateable value has fallen so tremendously in parts of the district.

26,684. (*Chairman.*) What do you charge per cent. in this district?—The average I should think would be about 5 per cent. with additions for water closets and baths.

26,685. (*Mr. De Bock Porter.*) With those additions what would it be?—When Mr. Simpson gave evidence the difference was then a little more than 1 per cent. between the two charges.

26,686. (*Chairman.*) Between what two charges?—Between the scale charge and the actual charge; the difference now, I should think, would be about 2 per cent.

26,687. (*Mr. De Bock Porter.*) Do you mean there is an abatement of about 2 per cent. upon the full charge which you would have under your Act?—Yes, or nearly 2 per cent.

26,688. (*Chairman.*) I do not quite understand you to say you charge the same percentage on rateable value as you did originally?—Yes; but that is nearly 2 per cent. below the scale charge—our statutory charge.

26,689. How has it changed from 1 per cent. to 2 per cent.?—Because the rateable value has fallen.

26,690. But that does not alter the percentage?—It does indeed, because in our case, houses rated at 100*l.* per year are charged at 5 per cent., and if they are reduced to 60*l.*, we should on our statutory scale be getting a higher percentage, but actually we still only get 5 per cent.

26,691. (*Mr. Pember.*) We should still only get the same amount?—The same amount.

26,692. You would get a higher percentage, but you would get the same amount of rates?—No, we charge

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Mr. H. Wilkins. the same rate and we suffer, because the rateable value has fallen.

25 Feb. '99 26,693. (*Chairman.*) What is your statutory rate of charge; how much per cent.?—It varies from 5 per cent. to 7½ per cent.

26,694. What is it in this gravitation district that we are speaking of?—It would range from anything between those on account of the size of the houses.

26,695. (*Mr. De Bock Porter.*) Would you give us a concrete case. Take a house rated at 50*l.* with two w.c.s. and a bath in each district, what would be the two respective charges?—There would be the difference of about a sovereign in round figures. We should be charging 4*l.* 8*s.* under our statutory scale, and 3*l.* 8*s.* under the modified scale.

26,696. On a house rated at 50*l.*?—Yes.

26,697. (*Chairman.*) You have a district in which you charge that modified scale, as you call it—what is the number of supplies?—About 13,000.

26,698. All in the county of London?—Yes.

26,699. 13,000 out of 70,000?—Out of 70,000 in the county of London—yes. At present it is about 80,000, it has increased very rapidly lately.

26,700. You have got a great number of local sanitary authorities within your area, have you not?—Yes.

26,701. I do not think we need go through them. There are 18 local sanitary authorities, that is county boroughs, municipal boroughs, metropolitan vestries, district boards of works, urban district councils and rural district councils?—Yes, 18 local sanitary authorities and three county authorities.

26,702. Of course, severance of your district between all those different local authorities would be quite impossible?—I should think it would be ruinous to the whole concern.

26,703. Have you anything to say about severance between the counties which you supply—London, Surrey and Kent?—Yes, I think that would be practically impossible to do. First of all, local areas have no finality.

26,704. The counties have a finality, have they not?—No. In 1888, Lambeth was in the county of Surrey, now it is in the county of London; Croydon was in the county of Surrey, now it is a county borough by itself. The County Council of London have been endeavouring to take in part of Hornsey, for instance, they may possibly want to take in Croydon or Beckenham for anything I know; I mean to say, if you lay out your system of works upon the existing arbitrary boundaries of local areas, you may find in a few years that a lot of your works will become obsolete, or want extensions at a very considerable outlay.

26,705. Independently of the possible parliamentary variations of boundary, do you see any difficulty or impracticability in the severance of your system?—Very considerable difficulty, because the system has been designed as a whole for one given area. For instance, the whole of our subsidence works and storage works are in the county of Surrey at Molesey, the whole of our filtering arrangements are also in Surrey at Surbiton; then part of the water is pumped to Brixton, from which we supply part of the county of London, part of the county of Surrey, and the county of Kent; some of the water also goes to the Norwood reservoir, which is in the county borough of Croydon, and from that Norwood reservoir we supply part of the county of London, part of the county of Surrey, part of the county borough of Croydon, and part of Beckenham in Kent. So you see there would be an element of tremendous confusion if you attempted to separate those supplies and works. Of course the difficulties of severance would increase according to the number of authorities among whom the property was divided.

26,706. I do not think anybody has suggested more than a severance between the counties?—Excepting that the local sanitary authorities are now the water authority by statute, failing a company, and counties outside London of course are not.

(*Mr. Claude Baggallay.*) It is proposed in the London Bill for this year to divide it up among all the local authorities, it is not limited to the counties.

(*Chairman.*) In what Bill?

(*Mr. Claude Baggallay.*) In the Bill of the London County Council before Parliament this year.

(*Chairman.*) That proposes to divide up the supply and distribution among all the local authorities.

(*Mr. Claude Baggallay.*) Yes, my Lord, and not to limit it to the County Council.

(*Witness.*) It gives them an option.

(*Chairman.*) That is a sort of *reductio ad absurdum*, I should call it. It is a way of driving them to take it in bulk.

(*Mr. Littler.*) There was some question about whether shares could be issued at a discount this morning. If they are fully paid up they can be issued at a discount. Debenture stocks can be issued at less than their nominal value. The Court of Appeal which decided this in 1893, said: "Whether shares in companies governed by the Companies Clauses Consolidation Act, and liable to calls can be issued at a discount, need not be decided on the present occasion. But the holders of stock issued as fully paid up under statutory powers are under no liability to creditors, and can have no calls made upon them." If they are taken as fully paid up at the time, debenture stock can be issued at a discount, but as to whether stocks liable to calls can be issued at a discount, the Court declined to decide.

After a short adjournment.

26,707. (*Chairman.*) I do not know whether you have anything to say to us on the subject of control?—I should like to point out the control to which the companies are now subject.

26,708. I think we know that; we have had it over and over again, and I do not think you need trouble yourself about that. For instance, there is no control at present over the provision made by the companies for future wants; do you think that might be advantageously introduced?—I think you had very much better leave that to the companies. If you put in control of that kind you bring in divided responsibility, which is exceedingly objectionable from the public point of view.

26,709. The companies have themselves voluntarily introduced that sort of control under the inter-communication scheme?—Yes.

26,710. Why is that not to apply to the general supply of water to London?—Because that is only for emergencies, and it is necessary then to get some board with power to suspend legislation.

26,711. (*Major-General Scott.*) If, in order to maintain the efficiency of a scheme of inter-communication, every company is made in some way or other, by some sort of control, to maintain a power of supply in excess of its average requirements, that would practically amount to what was stated?—That would amount to no control at all.

26,712. How?—Because every company now has a margin in excess of its present requirements; we could not live and could not carry on business unless we had.

26,713. (*Chairman.*) The East London has not got a margin in excess of its requirements?—I understood that General Scott was referring to such questions as engine power and filtration works.

26,714. (*Major-General Scott.*) The power of supplying water in excess of its ordinary supply?—Then, of course, the question arises, what do you mean by power of supply?

26,715. Exactly; and the companies may so interpret it that the supply they will have available in an emergency will be insufficient?—Speaking from memory, there is a clause in the Companies' Bill, I think, enabling the Local Government Board to prescribe the margin of pumping power that the companies are to provide if necessary.

26,716. You mean in the Act?—In the Companies' Bill now before Parliament.

26,717. That involves that principle?—Of course if you have got a margin to meet an emergency, you have certainly got a margin to meet ordinary requirements, therefore that Bill will give you all the control you want—I mean the public.

26,718. That is the question practically which my Lord asked you?—I did not quite understand it in that way; I thought it was a much wider question.

26,719. (*Chairman.*) For instance, do you not think there ought to be some power to inspect the water in the reservoirs of any company?—I see no objection at all to that. We do it ourselves.

26,720. At present there is no such power?—Sir Edward Frankland does it.

26,721. But he does it only by permission?—I am not at all sure; we have never raised the question whether he has any right to take the samples or not.

26,722. I do not see Lord Robert, he is not here. Do you think that some sort of control over the amount of pumping from wells might be expedient, so that you should not drain the wells of all your neighbours throughout the county?—No, I think we should object to that.

26,723. Why—because you believe you are draining your neighbours wells?—At the present moment we have got no wells in operation.

26,724. You have not, but the other companies have?—We are sinking a well at Selhurst, and of course then the question may arise. But I should prefer to take my stand upon the common law right of an owner of land.

(*Chairman.*) But the common law right of an owner of land never was intended to meet the case of a water company pumping water for the use of 5,000,000 people 20 miles away.

(*Mr. Balfour Browne.*) It was stated to apply in the case of *Chasemore v. Richards*, which was for the purpose of supplying Croydon.

(*Chairman.*) I am afraid there is no question about it. I know the common law does not make an exception; but the common law was not meant to apply to such a case.

(*Witness.*) I do not know where you are to stop if you apply that principle, because brewers and vinegar merchants use their wells to make beer and vinegar, which they send to all parts of the world—not merely to their neighbours but to people in China.

26,725. That is simply saying that the same sort of control might apply to brewers and vinegar merchants; but you think that a man ought to be allowed to take as much underground water as he can get in a piece of land 20 yards square, even though he is depriving all his neighbours of water?—I do, because I think the difficulty of putting the law on a sounder basis would be so great as to work exceedingly great difficulties and hardships. I think the law had very much better stand as it is.

26,726. (*Sir John Dorington.*) Would not the existing hardships be intolerable?—You mean if the water supplies were taken from wells?

26,727. Might not the rule of law, as it at present exists, be carried to such an extent as to be intolerable, so that Parliament would interfere to alter the present reading of the law?—No, I think self-interest would step in there, because if the neighbouring wells were giving way, our own well would be giving way to, or would require an increased amount of pumping to bring in the same amount of water, therefore I think self-interest is a capital corrective.

26,728. Where would the self interest come in between a small owner with a 50 feet well and a great owner with a well of 1,200 feet?—Because if we drain the wells to any extent round about, the water would require a greater expenditure to raise it from our own well.

26,729. (*Mr. Mellor.*) Take the case of a cottager; what remedy do you suggest that he should have? You take the whole of the water of his well and pump him dry. Up to that time probably he has had a good supply of water; what remedy do you suggest?—A private brewer could do equally the same.

26,730. (*Chairman.*) That is only saying a private brewer ought to be controlled?—Yes, if a Company is to be.

26,731. (*Mr. Mellor.*) Surely you do not mean to say that man ought to be without a remedy?—I do not see what remedy you can give him.

(*Mr. Mellor.*) I think myself you can give him a very good one.

26,732. (*Major-General Scott.*) At any rate, you would want to alter the law generally?—Yes.

26,733. Not as against any particular company or set of companies?—No, what I say is this; if you alter the law, the alterations would be of such a far reaching character that I am afraid in altering the law, you would work considerable hardship on small people.

(*Mr. H. W. Cripps.*) Let us wait and see what alteration of the law is proposed, and then we can see whether anything can be done.

26,734. (*Chairman.*) At any rate, you see nothing that can be done?—No, I do not.

26,735. You think a water company should be allowed to pump all its neighbours' wells quite dry, and leave them without any supply at all, and with no remedy, no check?—Why should you put a water company on a different footing to a mineral water manufacturer, or a brewer, or a vinegar merchant.

26,736. I am not asking you about any different rule being put upon the one than upon the other, but I am suggesting to you that, upon all people who pump water from underground, some sort of control ought to be put, so that they should not injure their neighbours?—If you alter the law generally, that is another question, but if you limit your control to water companies, I think it would be most unfair.

26,737. You think the chief delinquents ought to be let off unless all the minor delinquents are also swept into the net?—If the Royal Commission like to take upon themselves to alter the general law, I have nothing to say to that.

26,738. (*Major-General Scott.*) What do you say to the converse of the picture; supposing the owner of land possesses a shaft which he does not want to use as a well, in a chalk district, do you think it would be right that he should turn it into a cesspit and turn down his sewage into it?—I think the Public Health Act would interfere there.

(*Mr. Balfour Browne.*) There is a case on that too.

(*Major-General Scott.*) That has been settled then.

(*Mr. Balfour Browne.*) Yes, that is prohibited. I do not know whether your Lordship is familiar with the case. It works both ways. In the case of *Pickles and Bradford*, *Pickles* made a trench in order to deprive the Corporation of Bradford of water which was flowing in no defined channel; he did it with a view of forcing the Corporation to purchase. It was held in the House of Lords that he was justified in so doing. So it is not all on the side of the companies.

(*Mr. Mellor.*) That is because there was no defined channel.

(*Mr. Balfour Browne.*) Of course if there is a defined channel, there is a remedy against the company.

(*Witness.*) Certainly.

26,739. (*Mr. Mellor.*) Is there any official gauge as to water taken from the Thames?—Yes; the Thames Conservancy keep that gauge at Teddington.

26,740. Do the Thames Conservancy measure the quantity of water taken by all the companies?—No. I did not quite understand your question. The case is this, that each company has to maintain, under the Conservancy Act of 1894, a measuring apparatus, to be approved by the Thames Conservancy. We have established that measuring apparatus, and it has been approved by the engineer to the Thames Conservancy.

26,741. Is that open to inspection by anybody who wants to see it?—To any officer of the Conservancy, but not to the public.

26,742. (*Sir John Dorington.*) The Conservancy control your intake?—Yes, we furnish a daily return to the Conservancy, and whenever the engineer pleases he comes down to inspect the apparatus without notice.

26,743. (*Chairman.*) Do you mean that the company never accidentally go beyond the 24½ millions, or whatever it is?—I should not like to go quite to that extent, because when we have been working under pressure with an insufficient storage, at the present moment we are increasing our storage largely, but, supposing we did not have enough in our storage reservoir to meet the demand beyond the 24½ million gallons, I should not hesitate at all to take it from the Thames. I should put the question of the public safety and public convenience far before letting a few million gallons go down the Thames.

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26,744. I suppose you would prefer having your limit of quantity averaged over six months to having it day by day?—I think that would be an improvement, certainly.

26,745. (Sir John Dorington.) Is there any objection at all to that?—Not that I see.

26,746. (Chairman.) That is, that you might take more when the river was full?—Yes. Of course that would be better when our storage reservoirs are completed. We could scarcely refrain from taking water now at any particular time.

26,747. (Sir John Dorington.) The present condition has tended to restrict the provision of storage, I suppose?—It has.

26,748. (Chairman.) I am afraid that on the sinking fund you can hardly command your feelings, can you?—I will endeavour to do so; but the sinking fund is, if I may say so, a most atrocious act. May I call your Lordship's attention to what took place when the sinking fund was imposed?

26,749. I think you had better put in your statement on the subject of the sinking fund because it is so tragic?—Yes.

(The witness handed in Statement. See Appendix T, 3.)

26,750. (Mr. De Bock Porter.) At what date is Table 1 of that statement assumed to apply?—That is the present condition.

26,751. You are not paying 19,540*l.* at present?—You mean when will the debenture stock be chargeable?

26,752. Yes?—I should think that would be the position about 10 or 11 years hence, I hope not earlier.

26,753. And that will have a material effect in retarding the payment of back dividends, will it not?—It will.

26,754. Will it stop it altogether?—That depends upon the growth of revenue.

26,755. What percentage do you estimate the 19,540*l.* would be?—That would be about 1½ per cent. on the total share capital of the company.

26,756. (Chairman.) At any rate, you have handed in that statement of yours, showing what the amount of the sinking fund will be, assuming the present rates of dividend are maintained, and assuming that the dividends fall?—Yes.

26,757. You have used already rather a strong epithet, namely, "atrocious," but the whole point of the sinking fund is, that you raise your debenture capital without any profit?—We do very much more than that; we are raising our debenture stock now at a loss to the shareholders. The object of that statement is to show that.

26,758. At a loss to the shareholders?—At an absolute loss. I think it is very plainly shown that if our dividends were to be reduced 5 per cent.—

26,759. Yes, but that is an hypothesis?—We should then be paying a tenth per cent. on our share capital—

26,760. If your dividends were to fall to 5 per cent.?—We should still be liable to the sinking fund, although when the sinking fund was imposed Lord Claude Hamilton, the Chairman of the Committee, expressly said that he did not—in his own words—desire to put any condition which should cripple or be injurious to the existing interest as it stands without further interference. I say that the present operation of the sinking fund is not only to intercept the profit on the debenture stock, but it also takes something from the shareholders.

26,761. I confess I cannot quite follow that?—If the sinking fund did no more than Lord Claude Hamilton wished to do, when our dividends fell below 9½ per cent. on the 10 per cent. shares, and 7½ per cent. on the 7½ per cent. shares, the sinking fund would automatically stop—that is so, I think; it must be so. Whereas I say that if our dividend were to fall to 5 per cent. we should still be paying 1,500*l.* out of the profits of the company. Therefore I say the sinking fund has gone very far beyond the intentions of Parliament.

26,762. (Mr. De Bock Porter.) But the company gets a certain amount of profit on the 1 per cent. that is added for management?—The 1 per cent. is absorbed

in the loss. The only difference made by the 1 per cent. is to prevent the loss being greater than it is, that is all.

(Chairman.) There cannot be a loss.

26,763. (Mr. De Bock Porter.) There could only be a loss in the event of the dividend falling to 5 per cent.—Assuming that if there is a loss when the dividends fall there must also be a charge on the dividend when the dividends rise.

26,764. (Chairman.) Undoubtedly the operation of the sinking fund is to prevent you, although you have raised additional loan capital, adding to your gross and your net profits; therefore, if you are below your maximum dividends it prevents you reaching your maximum dividends and reaching your back dividends?—Yes.

26,765. I do not quite see how, even if your dividends fall below 5 per cent., it might inflict a loss upon you?—Yes, it would.

26,766. You are only charged with the difference between 5 per cent. and your dividend interest?—The object of the sinking fund was to intercept additional profit on the debenture stock.

26,767. It is to prevent your making any additional profit; surely it cannot do more than that?—If it did no more than that then, when our dividends remained stationary at 9½ per cent. and 7½ per cent.—those were the rates when we issued debenture stock which is chargeable with the sinking fund—if our interest remained at that the sinking fund ought to be no charge.

26,768. (Major-General Scott.) Why?—Because the object was to intercept additional profit—and as long as we paid the 9½ per cent. and 7½ per cent., and less than that, we should be making no profit on our debenture stock.

26,769. The profit was to be calculated on the average of the whole of the capital—the loan capital as well as the share capital, was it not?—Yes. But let me give you a case in point. We are now expending something like 200,000*l.* on storage works; those storage works will not bring in a penny of income; we shall pay the interest on that at 3 per cent., which will be 6,000*l.* a year; in addition to that we shall pay the sinking fund upon that, which is another 4 per cent. Parliament, by imposing the sinking fund in its present form, regards that 200,000*l.*, which we are laying out without a penny additional income coming from it, as being as productive as our original capital.

26,770. (Chairman.) Anyhow, we quite agree with you, or, at least, I do, that if the capital expenditure is not productive of the same profit as the rest of your capital expenditure it ought not to be charged with the sinking fund, and we so dealt with your expenditure for the amalgamated scheme the other day. Of course the whole justification for the sinking fund is the capital expenditure raised by debentures, which is as productive as the rest of your capital expenditure?—The justification of the sinking fund in 1886 was then that purchase was thought to be imminent.

26,771. Yes; and of course that you should not be swelling your profits—

(Mr. Pember.) In the meantime.

(Witness.) As a temporary expedient I should have nothing to say against it, if that had been all that had been accomplished.

26,772. (Mr. De Bock Porter.) Do you think, with the payments you will have to make to the sinking fund, you will be able to make any large expression upon the back dividends?—I should not like to enter into the domain of prophecy, it depends entirely upon the development of our district. If you abolish the sinking fund of course the public will derive the benefit all the earlier.

26,773. (Major-General Scott.) But you will have first to get your 10 per cent.?—We have got that, and we are paying a small amount of back dividend.

26,774. Yes, you are, in your special case?—Yes.

(Mr. Pember.) A concrete instance is the best way to take it, I venture to think. Supposing a company, we will say, receives 300,000*l.* a year, and they raise a million of money; the fiction is that the million of money brings in another 100,000*l.*, but it does not bring in another shilling.

(*Chairman.*) In that case, if they raise money that does not bring in a shilling we all agree, I think—at least, I agree—that they ought not to be charged with the sinking fund upon it.

(*Mr. Balfour Browne.*) It may save the dividend on the first million, my Lord, and then it should be charged. This company are not throwing away 200,000*l.*; they are doing it for something, in order to secure their present dividend.

(*Mr. Pember.*) No.

(*Witness.*) I do not admit that, Mr. Browne.

(*Mr. Balfour Browne.*) Then you should not expend the 200,000*l.*

26,776. (*Mr. De Bock Porter.*) This unproductive expenditure will be a very important matter when you come to the question of arbitration, will it not: if it is so large as you say?—No, because the arbitration will go upon income; the capital expenditure will have nothing to do with the arbitration.

26,776. Will it not, if you are in front of a very large expenditure which will not be remunerative?—If in front; but we are behind it now, the liability is incurred, you see.

26,777. Is all your future expenditure to be remunerative?—That I could not say, of course.

(*Mr. Pember.*) Of course they are two perfectly separate subjects. The question whether the income would be stable without the sinking fund and the question what effect the sinking fund has upon income; those are two perfectly separate questions.

(*Witness.*) Or perhaps, to put it this way, the sinking fund may not be a material factor if the Commission report against purchase, because, possibly, Parliament will then repeal the sinking fund. It was imposed only in view of an imminent purchase; and if the imminence of the purchase disappears, I suppose the sinking fund disappears with it. That is the view I should prefer to take.

26,778. (*Chairman.*) Now we know that your charges per cent. are higher than those of any other company?—Except, I think, that Mr. H. L. Cripps said the East London were rather higher than ours.

26,779. (*Mr. Balfour Browne.*) I think yours are the highest?—Excepting Mr. H. L. Cripps' example of the larger rateable value. Mr. H. L. Cripps gave the East London as being higher than ours, but on anything below 200*l.* ours are unquestionably the highest.

26,780. (*Chairman.*) I suppose you would adhere to your charges as being part of a parliamentary bargain?—Certainly. Will you just allow me to explain the difficulties which the company experienced in raising their capital in 1848 even with the advantage of these so-called high charges. In 1848 the company went to Ditton, and it was necessary then to raise some 200,000*l.* The bulk of the money that was raised for the first instalment of the Ditton works was found by the directors and their friends. They issued an appeal at the end of 1849 to the public which practically met with no response. The directors wished to raise then something like 60,000*l.* and the way they did it was that they each doubled their own holdings, and then selected 10 of the largest shareholders, allotted shares to them without application, and sent a request that they would be good enough to take up the shares. Those were allotted at par and taken up, and in 1852, when the works were opened, the public began to subscribe, but the difficulties in the initial stages of the works were very great, showing clearly that the public did not think that the high charges of 7½ per cent. were sufficient inducement to stake their money in what was, practically, then an experiment. On the faith of that parliamentary bargain, something like 2 millions of money have been expended.

26,781. Although you have higher charges than most of the companies, I will not say all, is your income per million gallons supplied above that of the other companies?—No. According to Lass's analysis, the income per million gallons of the New River Company is 42*l.*; of the Chelsea, 35*l.* 15*s.*; of the West Middlesex, 31*l.* 18*s.*; of the Lambeth (No. 4), 30*l.* 6*s.*; of the Kent, 29*l.* 37*s.*; of the Grand Junction, 28*l.* 6*s.*; of the East London, 20*l.* 9*s.*; and of the Southwark and Vauxhall, 20*l.* 0*s.* 3*d.*; the general average being 28*l.* 9*s.* compared with the Lambeth's 30*l.* 6*s.*

26,782. The difference between the New River and the Southwark and Vauxhall is enormous, the one is

double the other; but why you should be getting 30*l.* 6*s.* per million gallons supplied when the Southwark and Vauxhall, your immediate neighbour, is only getting 20*l.* 0*s.* 3*d.* I cannot see?—It is a parliamentary bargain. If you take my further figures you will see they do not work out unfairly. It might be, as has been suggested by the County Council, that the Southwark Company are not sufficiently paid to do their work well. That has been suggested, and it is clearly against the public interest for any large undertaking to have an unremunerative or insufficiently remunerative rate.

(*Mr. Pember.*) They are only neighbours at one end.

26,783. (*Chairman.*) Do you mean that it is against the shareholders' interest?—And against the public interest.

26,784. What is the public interest in the matter?—The greater the interest of the shareholders the greater the prospect is that the public will benefit proportionately, either in quality of water or in excellence of service.

26,785. You mean that a well-paid shareholder—a shareholder who is getting 10 per cent.—serves the public better than a shareholder who is getting only 5 per cent.?—I should think the natural tendency would be that. I mean the public would expect the directors to look after the matter, and there would be less excuse for stinting expenditure.

26,786. The public might expect it, but I do not quite see where the pressure on the directors is?—It is only my opinion of course; but I think it is an opinion based on sound reasoning.

26,787. (*Mr. De Bock Porter.*) Do you not think the directors of a concern not paying nearly as full a dividend would be much keener in management than those who are paying a full dividend without any trouble?—That is my argument.

26,788. (*Chairman.*) No, your argument is the other way?—They might stint their expenditure to the prejudice of the purchaser.

26,789. (*Mr. Mellor.*) I suppose if you paid 15 per cent. the public would benefit still more?—That would work itself out; that would be a mere temporary payment. We cannot go beyond 10 per cent. as a permanency.

26,790. (*Chairman.*) That would be a mere accident; but you might bring in an Act of Parliament next year to raise the maximum dividend to 15 per cent.; if so, would the supply to the consumer improve?—I do not think the Lambeth supply could be improved.

26,791. You say this income per million gallons is the best test. Let us take the income per house supplied; how does that run?—Before passing from the Southwark Company, may I just call your attention to what Mr. Halsey, the Chairman of the Surrey County Council, suggested; that was, that the Southwark rate should be increased.

26,792. Did he suggest that?—Yes.

26,793. (*Sir John Dorington.*) When?—When he was giving evidence here he suggested a uniform rate between the Lambeth and the Southwark Companies for the whole of the Surrey area.

26,794. (*Sir George Bruce.*) Yours to be reduced at the same time?—That may be, but he suggested that the Southwark should be increased.

26,795. (*Chairman.*) What do you want to say about that?—Merely as bearing out what I say, that possibly the Southwark have not got a sufficiently remunerative rate.

26,796. The Southwark have told us that their income is increasing, and that they are going up by leaps and bounds?—That may be so; of course, they know their concerns better than I do. There are, however, differences which perhaps I ought to mention between our district and the Southwark. Ours is very largely of a rural character, it is scattered and not so compact as the Southwark, and also the diversity of level in our district is greater than that of any other London company.

26,797. We have heard that you have more pumping to do?—Yes, we have.

26,798. What is the income per house supplied in the different companies?—There we are slightly below the average. The Chelsea Company head the list at 4*l.* 12*s.* per supply, the New River comes next with 3*l.* 4*s.*

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then the Grand Junction 3·28l., the West Middlesex 2·91l., then we come, number five, the Lambeth 2·47l., then the Southwark 2·04l., the Kent 1·93l., and the East London 1·66l.; the general average being 2·53l. or a fraction above the Lambeth average.

26,799. (*Sir John Dorington.*) The East London is the cheapest?—They get the smallest sum per house.

(*Mr. Pember.*) Their neighbourhood is such a poor one.

26,800. (*Chairman.*) Have you got the cost of pumping?—There we head the list. In the Lambeth Company the cost of pumping per million gallons is 3·62l., the West Middlesex 3·45l., the Kent 3·04l., the Grand Junction 2·47l., the Southwark 2·32l., the New River 2·21l., the Chelsea 1·62l., and the East London 1·58l. The general average is 2·44l., so that the Lambeth Company there is 50 per cent. above the general average.

26,801. I suppose you would say that the extra cost of pumping that your system requires justifies your extra rates?—I do—not only the extra cost of pumping but the extra difficulty which that illustrates.

26,802. (*Mr. Pember.*) Diversity of level?—Yes.

26,803. (*Mr. De Bock Porter.*) The difference between the Lambeth Company and the West Middlesex is very small indeed, whereas the West Middlesex charges are some of the lowest—it is only a difference between 3·62l. and 3·45l.?—Give me West Middlesex conditions of supply, and I will take West Middlesex rates at once.

26,804. It is a more valuable district?—Yes.

(*Mr. Pember.*) And it lies closer together.

(*Witness.*) I have some figures showing the profit per supply which will illustrate that.

26,805. (*Sir John Dorington.*) Do they supply to as high levels as you do or nearly so?—They have not got the diversity.

26,806. (*Mr. Pember.*) May I ask him a question on that—it would just clear it up as we go on? (*To the witness.*) When you give the West Middlesex rates or talk of the West Middlesex rates, do you take off the rebates or not?—This has nothing to do with the rebate.

(*Chairman.*) This is the cost of pumping that we have just had, and there is no rebate on that.

(*Mr. Pember.*) No, but we had the income per million gallons supplied.

(*Witness.*) That is less the rebate—net.

26,807. (*Sir John Dorington.*) Is your pumping machinery as good quality as the others—there is no extra charge owing to defective machinery?—I think not.

26,808. It is merely due to the levels to which you have got to raise it?—Yes. Of course the West Middlesex is in rather a different way—they pump all their water from a low level, but that is the initial stage.

26,809. (*Chairman.*) What is the very high district that you have got to pump to?—The Crystal Palace district and round there—South Norwood. It is not only the one district, but there are intervening hills which increase the difficulty. Take for instance, Knight's Hill, and Salter's Hill, and Central Hill, and then we come to another hill, the highest of all, Sydenham Hill.

26,810. Is Sydenham Hill higher than Hampstead?—The level there is just over 400 feet at the highest point we touch; I do not know what the level of Hampstead is.

(*Mr. De Bock Porter.*) About the same.

26,811. (*Major-General Scott.*) Your principal increase of supply in the future will be at points the most remote from your intakes, will it not?—It will be the most remote from our gravitation district.

26,812. Do you anticipate in the future that your supply will be more expensive or more economical?—That entirely depends upon the character of the supplies. If you get a good class house, say, of 60l. to 70l. a year, we shall be able to supply it well; if we get houses with large gardens possibly we shall not supply quite so well; on the other hand, if we get houses from 20l. to 30l. a year we shall not supply quite so well.

26,813. (*Mr. Pember.*) You mean not so much to your advantage?—Yes; I mean not pecuniarily as well.

26,814. (*Major-General Scott.*) As regards the actual physical difficulties, you will have a longer distance to drive the water, and, on the average, a higher level to pump it to, will you not?—I am not quite sure how that will work out on the average of the whole district. We have got a high level at Esher, at one extreme, and we have got a high level at Beckenham and Sydenham at the other, but then, of course, we have got a good deal of moderately low land in between.

26,815. Then the friction is very important?—Certainly.

26,816. And you go many miles away from your intake?—The friction, of course, would be a serious matter.

26,817. It is a very serious matter?—Eventually it would be, but you see that would merely involve an outlay on large trunk mains which would be a very small matter compared with the total amount of the capital of the company—that is another way of looking at it—so it is really impossible to forecast what the financial result of supply will be when the district is well developed.

26,818. (*Chairman.*) What is your margin of profit now—perhaps you had better give us the figures?—The profit per million gallons in the New River Company is 25·08l.; in the Chelsea Company, 23·44l.; in the Kent Company, 18·81l.; in the Lambeth Company 18·07l.; in the West Middlesex, 17·07l. in the Grand Junction, 14·71l.; in the East London, 10·90l.; and in the Southwark, 10·39l., the general average being 16·54l. Then if you take it per supply, the profit of the Chelsea Company is 2·75l.; of the New River, 2·04l.; of the Grand Junction, 1·68l.; of the West Middlesex, 1·59l.; of the Lambeth, 1·46l.; of the Kent, 1·24l.; of the Southwark, 1·06l.; of the East London, 0·86l., the general average being 1·44l., or as nearly as possible the same as the Lambeth Company.

26,819. So that you actually get a higher profit per million gallons than you supply than the West Middlesex, which is such a prosperous company?—More per million gallons, but less per supply.

(*Chairman.*) Not very much.

(*Mr. Balfour Browne.*) It is very nearly the same per supply.

(*Witness.*) Yes, it is not worth discussing.

26,820. (*Chairman.*) To the uninformed mind that is a little puzzling at first sight?—One explanation might be this; the quantity that they have to supply gratuitously for fire extinction, and such purposes might be greater than ours; that would bring down their price.

26,821. Do you mean more fires in the West Middlesex district than in yours?—There may be—I do not know; or their fires may be larger.

26,822. (*Major-General Scott.*) Have you any prospect of getting a supply locally from wells in any part of your district?—We are sinking a well at Selhurst at this moment.

(*Mr. Pember.*) I think there my question comes in about the West Middlesex.

26,823. (*Chairman.*) Yes, it would. (*To the witness.*) When you put the West Middlesex profits at 17·07l. per million gallons, that means with their reduced rates, I suppose?—Yes, if you add the rebate, their sum would come out larger than ours; you would have to add about 12½ per cent.

26,824. (*Mr. Pember.*) That, of course, holds good with the table about supplies?—Yes.

26,825. (*Chairman.*) But even their reduced rate means a profit of 10 per cent., and all back dividends paid?—Yes.

26,826. Whereas you are making 10½ per cent.?—Yes.

26,827. (*Mr. De Bock Porter.*) Do you think that the differences that you have just been telling us about justify the enormous difference there is in the 24l. houses. I see the difference is between 2l. 18s. 7d., I think it is, and 19s. 2d.?—I do not think I am called upon to justify these charges. It is part of a Parliamentary bargain, on which the public have subscribed two millions of money; and they are entitled to have these charges maintained till their interest is satisfied.

26,828. (*Chairman.*) You must not be too sanguine in that respect. If you have to go to Parliament for any favour, they may put upon you some change in your charges?—All I can say is that it would be a great breach of faith on the part of Parliament.

26,829. No, no?—If Parliament lets you spend two millions of money on certain conditions.

26,830. There would be a breach of faith, you say, if it was against your will; but you may be driven to go to Parliament for some concession, and Parliament may say to you: "We will only give you that concession on the terms of your lowering the rates;" and then it will be for you to choose?—Quite so.

(*Mr. H. W. Cripps.*) It is a very common course for Parliament to take.

(*Chairman.*) A very common course for Parliament to take, I quite agree. If you choose to remain as you are, it would be a breach of parliamentary faith to alter your charges; but if you come for any favour, Parliament may put your nose to the grindstone.

(*Mr. Pember.*) It depends a good deal, if you do not mind my saying so, what is the favour.

(*Chairman.*) Yes.

(*Mr. Pember.*) Personally, I should not think you were justified in calling this a favour. We want the couple of hundred thousand pounds to enable us to carry out statutory liabilities in a fresh part of our district which has not hitherto been supplied. I should not call that a favour.

(*Witness.*) I was just going to say that I cannot conceive the company wanting a favour in that respect. It is a common thing, of course, to have to go to Parliament for further powers.

26,831. (*Mr. H. W. Cripps.*) How can you tell what it is?—It is a common thing, if a company goes for power to extend its area, that they have to submit to a reduction of rates; but we have no necessity to extend our area. We have got as large a district as we can economically serve, and the mere raising of capital to supply new portions of our district, or to improve the existing supply cannot be looked upon in the light of a favour from Parliament.

(*Mr. Pember.*) No.

26,832. (*Chairman.*) At any rate, you say, I suppose, that these figures which you have just laid before us justify your high charges?—Yes.

26,833. How do your rental values stand in your district as compared with other districts in London?—I happen to know an instance which will illustrate this. A friend of mine was inquiring after the rent of a house near Cadogan Square. It is an eight-roomed house, and he was asked 75*l.* to 80*l.* a year. If he had cared to come to Brixton, he could have got a house with equal conveniences, and with the addition of a bath room, for 35*l.* to 40*l.*; and, therefore, I say that in comparing our 7 per cent. on a 35*l.* house, you must not compare that with 4 per cent. on a 35*l.* house in Chelsea; you must compare it with 4 per cent. on a 70*l.* or 80*l.* house of Chelsea.

26,834. (*Mr. De Bock Porter.*) Supposing you compare a district like Balham with a district like Stamford Hill, you would not say there was very much difference there?—I do not know anything about Stamford Hill, but I do know in Balham about the 24*l.* rated house you are referring to. That is not a very common instance. It is confined to a few hundreds out of our 110,000—something under 500, and I find, almost without exception, in the cases I have taken out, there has been a general diminution in value. One of the houses that we have got now rated at 24*l.* in Brixton was originally rated at 40*l.*

26,835. (*Chairman.*) What is that due to?—The alteration in the neighbourhood. Take, for instance, Brixton, which, perhaps, is a very good typical neighbourhood. Take the district of Angel Town. It was formerly a good residential district, convenient of access to the West End and to the City. The City people who then lived there have gone further afield; and some houses which were then in the occupation of one family, at from 80*l.* to 90*l.* a year, are now let as lodging houses very largely at a rental of perhaps from 50*l.* to 60*l.* a year. We get a reduced water rate, and we have to supply more water. Take, again, the main line of Brixton Road and Brixton Hill; some of those houses have gone down in value considerably because of the tramway system.

26,836. How has the tramway affected them?—People living in residential property leave the line of the tramway because of the constant jingle and the noise from the tramways. I was offered for 100*l.* a year a house some three or four years ago at Brixton Hill, which was formerly let at 120*l.*, and I am told it is now let at 85*l.*—a house with a nice garden.

26,837. On account of the tramway?—Mainly that, I think. Then take again Clapham Park. At Clapham Park we used to have houses rated from 200*l.* to 400*l.* a year. It is rare to find a house rated at more than 160*l.* there now. That is due to the change of fashion. The houses are very well built—Cubitt built houses, with enormous grounds of two or three acres—in some cases as much as 10 acres. Those houses are less than half the value they formerly were. Take the case of my predecessor the late Secretary of the Lambeth Company, he lived in a house in Grove Road, Clapham Park. He was paying 140*l.* a year, and after he died, that house remained empty for three years, and is now let at 80*l.* a year. So that I say in considering the rates, you have got very much more to consider than the mere scale.

26,838. (*Mr. De Bock Porter.*) Only that change takes place in other parts—all round Stamford Hill, for instance, there has been a great change of course?—I know nothing about Stamford Hill, and if you take Chelsea or the West Middlesex district or the Grand Junction, the change may be in the other direction.

(*Mr. Rickards.*) No.

26,839. (*Mr. De Bock Porter.*) Parts of Kentish Town are completely changed—I mean the falling off in value is not peculiar to your district?—I know. I do not suggest for a moment that it is.

26,840. It is very marked?—It is very marked indeed, and it extends over such a large area. Take Tulse Hill again—there you are getting houses at very little more than a third the former value. The late Chairman of the Kent Company, Mr. Smith, had a house at Sydenham Hill, and he told me that he had bought it, and he let it on lease at 300*l.* a year. He went to live in it, because he could not get more than 120*l.* after he had let it for something like 15 years at 300*l.* a year. The tenant left, and he put it in the hands of several agents, and the highest offer he had was 120*l.* a year. He would not take that, so he went into occupation. You see we are dealing with large figures here.

26,841. (*Chairman.*) Your district is largely, I gather a rural and suburban district?—Yes.

26,842. In a district of that sort is there any difference in the intervals at which the main is tapped?—Yes. Probably as to our average frontage in the rural districts we should tap the main once, perhaps, in 100 yards, whereas in London you would probably tap them once in an average of 10 or 15 yards.

26,843. Is it more advantageous to the company to have the main tapped at short distances?—It is more profitable, because there is so much less dead capital involved.

26,844. Supposing you were to introduce a common rate all over London, do you think that would introduce an equal burden throughout London or not?—I am quite certain it would not. To get a common burden you must get a common basis of charge, and how are you to arrive at that? Clearly not by a rental value, because as I have pointed out rental value varies immensely. If you get a six-roomed house in one district it would let, perhaps, at 30*l.* a year, and it might not fetch more than 10*l.* or 12*l.* in another. Then again you find the same thing applying in ordinary commodities. You get different prices in different parts of London for bread, milk, vegetables, and things of that sort. It depends largely upon the locality.

26,845. But there is surely nothing like the difference we get, which you have just told us of, in rents, is there?—I should think in the supply of fish it would be even greater. If you take the East End of London where you have got the costermongers going round with their barrows selling fish, which they must get rid of during the day, I should think probably the East Ender would pay a tenth of the price I should have to pay at Streatham.

26,846. We know, of course, that parochial charges differ in different parts of London?—Yes. Take my own road—the road I live in—I live in a house in

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Mr. H. Wilkins. Streatham parish, and I pay 6s. 5d. in the £, whilst in the Lambeth parish they are only paying 5s. 9d.

26,847. That is hardly the difference between your water charges?—No, but the principle is exactly the same. It is merely a matter of degree.

26,848. Yes, but degree, when it is translated into shillings and pence, is the whole point, is it not?—You must have a boundary somewhere. Take, again, the four mile cab radius, with which your Lordship had something to do, I think, or at any rate your Lordship knew something about it. At Brixton Hill, the four-mile radius intersects a house with two entrances to the front garden. If the owner of that house takes a cab from one of his entrances he hires inside the radius, if at the other gate he hires outside the radius, and is subject to a different scale. You must have a line somewhere.

26,849. So that you suggest there must be a line between you and the Southwark and Vauxhall?—Yes.

26,850. But, however, that difference between you and the Southwark and Vauxhall, oddly enough, disappears in the regions in which you are in contact?—Yes, but I think I have explained that. I say that the lower charges originated in the district before the Southwark and Vauxhall Company was in existence.

26,851. I had not caught that. That is material?—When the Lambeth Company started in 1735 they agreed upon a certain scale of charges. The Southwark and Vauxhall at its first stage came into existence in 1805, and we were then charging the same scale practically as we are now in that district.

26,852. I see, I had not caught that. It is important?—In 1834, and again in 1848, when we came to Parliament, our witnesses said that it was not the intention of the Company to increase their charges in the original district, but that they wanted these higher charges for the outlying district, and that undertaking has been observed to this day.

26,853. You say the reason of these lower charges in that particular district was that it was a gravitation district?—Yes, practically that. It was partly that and partly because it was the old original district of the Company.

26,854. (*Mr. Pember.*) And, of course, thickly populated even then?—Yes, more thickly than it is now in some parts.

26,855. (*Chairman.*) Do you say your supplies increase from year to year?—Yes; they have been increasing very considerably of late.

26,856. Have you had any added supplies where the people might equally well have gone to the Southwark and Vauxhall, for instance?—Yes.

26,857. They have preferred you with your 7½ per cent., do you mean, to them?—I do not think that question would come in. The Southwark and Vauxhall Company have got nothing above our gravitation district.

26,858. At any rate, you do get an increase of supplies from year to year, people being willing to pay your charges?—Yes.

26,859. I do not know whether you are prepared to solve a question that puzzles most statesmen, namely, as to whether the rate is ultimately paid by the tenant, or by the landlord?—My own opinion very strongly is that it is ultimately paid by the landlord, and for this reason, that supposing a house were let at a certain sum, if the rates are low, the landlord can command a higher rent. If the rates are high, he has to submit to a reduction. I recollect a friend of mine who was interested in property in Bethnal Green, when the Common Poor Fund was established in 1867, told me that the effect of reducing the poor rate from 10s. in the £ to 7s. 6d. was to increase the rental of the annual rented property. Of course, the lessees could not be interfered with, and I presume that when the then existing leases fell in the rents would correspondingly increase; I think that is a law of nature.

26,860. (*Mr. De Bock Porter.*) You would say that the landlords in your district pay the charges, and not the tenants?—I think that is the ultimate effect, but, of course, the water rate is so small that it would not have such a bearing upon it as the parochial rates; and I think I am fortified in that contention by the Report

of the Select Committee of the House of Commons on town holdings of 1892.

(*Mr. Pember.*) Perhaps it might be interesting to you to know, my Lord, that Mr. Wilkins knows all about these rates so well as he seems to do, because he was for many years vestry clerk to the St. James' Vestry.

(*Chairman.*) I do not know that being vestry clerk would help one to know upon whom the incidence of that rate ultimately fell.

(*Mr. Pember.*) No; but it is not general knowledge, and he is saying a great deal, and I merely say that it is knowledge that he so acquired.

26,861. (*Chairman.*) Of course, the landlord cannot get any benefit from a reduction of rate till his leases fall in. That is clear?—Yes, quite so.

26,862. Up to that time it must fall upon the occupier—the rate rising or falling?—If the rate rises or falls, the lessee is the person, of course, who derives the benefit, or suffers the loss. There can be no question about that.

26,863. You think, when the leases fall in, and when there comes to be fresh letting, it has its effect on the rents?—I have no doubt of it.

26,864. Now you have some corrections to make of the evidence which has already been given. I will not stop you; you must really go on in your own way, and tell us any corrections you wish to make?—I have not yet put in all the Returns of the company.

26,865. Very well. Will you hand in the Return showing the distribution of your capital expenditure?—Yes.

(*The witness handed in Return. See Appendix T, 4.*)

26,866. Will you also hand in the Return as to your works and supply?—Yes.

(*The witness handed in Return. See Appendix T, 5.*)

26,867. And your estimates of future capital expenditure?—Yes.

(*The witness handed in Estimates. See Appendix T, 6.*)

26,867A. I see, in the financial return, which you handed in at Question 26,587, your 10 per cent. stock at present market prices sells as a 3·35l. stock?—Yes, about that.

26,868. Your 7½ per cent. stock at its present selling price produces 3·22 per cent.?—Yes. The 7½ per cent. stock, of course, is better secured as to its dividends; and that accounts for the 10 per cent. selling at a lower price.

26,869. Slightly lower?—Fractionally lower, because, of course, the 10 per cent. shareholders would bear the brunt of any increased expenditure in the first instance. That is the reason.

26,870. Why so?—Because, supposing a half per cent. on our 10 per cent. share, we will say, takes roughly in the half-year about 2,500l., and supposing our expense is increased by the 2,500l., or 3,000l., or 4,000l., or 5,000l., that would go in diminution of the 10 per cent. shares until they reached the 7½ per cent. level.

26,871. Do you mean you would go on paying your 7½ per cent. shareholders your maximum?—Yes.

26,872. While you did not reach the maximum with the others?—Yes.

26,873. (*Mr. De Bock Porter.*) Are they preference shareholders?—No, they are not.

26,874. (*Chairman.*) It is a mere matter of arrangement or management on the part of your directors?—That is all. The shares were created in 1856, and 7½ per cent. was then the highest amount which the company could get; I mean get of profit—I do not mean could have got from Parliament.

26,875. Then you do not regard, I gather, Stock Exchange quotations as being any true estimate of the value of your shares?—No, I do not. If you will just look at this, there is one point which will illustrate that very well.

26,876. I should like to have that illustrated. The last price of your 10 per cent. shares is 302½l.?—Yes.

26,877. Why is not that the fair representation of the value of the shares?—I was going to show you the fluctuations. To take 1893, the 10 per cent. shares stood at 239½l., and the 7½ per cent. shares stood at 199½l., there being a difference of just 40l. between the two. If you take March 1896 to March 1897 it will

make the illustration, perhaps, better. If you take the $7\frac{1}{2}$ per cent. shares in March 1896, they stood at 227 $\frac{1}{2}$, and in March 1897 they stood at 224 $\frac{1}{2}$, although the amount of security was exactly identical.

26,878. (*Mr. Pember.*) The smaller shares had dropped more than the larger ones?—Yes, the smaller shares dropped by 3*l.*, and the larger shares by 1*l.*, although the smaller interest shares at that time had their dividends, as I have said, better secured than the 10 per cents.

26,879. (*Chairman.*) Better secured simply by the goodwill of the directors, because there was no reason in the statutes why they should be better secured. There is nothing in the statutes that obliges you to reduce the maximum on the 10 per cent. shares before you touch the maximum on the $7\frac{1}{2}$?—You cannot do it otherwise, because they are neither of them preference. Up to $7\frac{1}{2}$ per cent., whatever is earned has to be divided equally between the two classes of shareholders. Supposing we were only earning 5 per cent., we should pay 5 per cent. on both classes of shares, 6 on both classes of shares, 7 on both classes of shares, $7\frac{1}{2}$ on both classes of shares, and then $7\frac{1}{2}$ per cent. on the $7\frac{1}{2}$ per cent. shares and 8 and 8 $\frac{1}{2}$ and so on the 10 per cents., and then if we fell again, it would be from 8 $\frac{1}{2}$ to 8 and from 8 to $7\frac{1}{2}$ on the 10 per cent. shares.

26,880. It is not till you fall below $7\frac{1}{2}$ that the $7\frac{1}{2}$ per cent. shares can suffer any loss?—That is so.

26,881. What you have said simply shows that the Stock Exchange are not always quite alive to the respective values of the two classes of shares?—Or the shares themselves. In fact, there is no true dealing on the Stock Exchange in Lambeth shares. The only time that shares are put on the market is in case of death, termination of trust, or because of a person wanting to realise.

26,882. Termination of trust—your shares cannot be held by trustees?—We do not take notice of trusts, but they are held largely on trusts—very largely.

26,883. You mean there is some special trust, because it is not an ordinary trustee security?—Let me illustrate on a very common practice, which is this. A man has a large holding in the Lambeth Company; he knows very well that if that were realised on his death it would be realised at a loss, and so he leaves it to his trustees to realise at their discretion, with liberty to continue the existing holdings. But if they realised, they must re-invest in trustee stock bearing a lower rate of interest. That is a very common thing, and I think is a point that has been very largely overlooked by the witnesses for the County Council.

26,884. (*Mr. De Bock Porter.*) Will not the sinking fund have the effect of keeping up the price of your stock?—If it is continued I daresay it will, but, as I say, I hope to see the sinking fund abolished. At any rate it is much too small to have that effect at present.

26,885. When it gets to 16,000*l.* a year it may very much enhance the price of stock?—Yes, but I hope by that time the sinking fund will be abolished.

26,886. (*Chairman.*) Do you mean to say that 302 $\frac{1}{2}$ *l.* does not represent the present value of a 10 per cent. 100*l.* share in your company?—I do not think it does. This price was fixed when the bank rate was very high, and much to my astonishment our shares have not gone up on the reduction of the bank rate. I fully anticipated they would, but they have not. I suppose it is because there have been no dealings in them.

26,887. (*Mr. De Bock Porter.*) Are the figures on this paper quotations, or are they actual transactions?—Quotations merely. Of actual transactions we have very few. A large number of our transfers are merely for a nominal consideration from one set of trustees to another.

26,888. (*Chairman.*) You surely would not put the security of one of your shares as being such that an investor would be content with anything less than 3 per cent.?—I should certainly think our $7\frac{1}{2}$ per cent. shares are of that description.

26,889. Such that a man should buy them so as to get less than 3 per cent. upon his actual outlay?—I should think our $7\frac{1}{2}$ per cent. shares are an absolutely secured income.

26,890. As good as consols then?—Practically. See what they are. You have got 406,000*l.* only. Behind these you have got a million in 10 per cent. shares

which are receiving full dividends, and you have got in addition to that a contingency fund of 20,000*l.* built up within the last four or five years.

26,891. Will the contingency fund help out the future dividends?—Yes, if necessary. I mean to say we should charge the contingency fund with heavy expenses of renewal like the renewal of a trunk main for instance.

26,892. Then you would say that each shareholder, if his share was purchased ought to get more than 302*l.* 10*s.*?—I say he ought to get his present income equally well secured and equally marketable.

26,893. What security would you mention in the market now that is as good as these shares, Colonial stock should you say?—I think you will find that ordinary English railways are not paying 3 per cent. I should regard our shares as better securities than those. If you take the ordinary English railways ordinary stocks you will find that very few of them are paying 3 per cent. if any; and I should certainly class the waterworks securities as before them.

(*Mr. Lewis.*) They pay more than that?

(*Mr. Balfour Browne.*) The ordinary do.

(*Witness.*) Take the Great Eastern for instance.

26,894. (*Mr. Lewis.*) Yes, but then that is looking very much into the future?—Yes.

26,895. Take the North-Western, and the Midland, and the Great Northern.

(*Mr. Pember.*) Take the South Western, that does not pay 3 per cent.

(*Mr. Lewis.*) I think it will be found, with the exception of Great Eastern stocks, that all the large companies pay more than 3 per cent.

(*Mr. Pember.*) The South-Western does not. I wish it did, but it does not.

(*Mr. Lewis.*) The Great Western did not this year, but I am talking of ordinary circumstances.

(*Mr. Pember.*) The South-Western does not. The South-Western pays 6 $\frac{1}{2}$, and 200 is the price.

(*Mr. Littler.*) I think I am correct in saying that the Great Eastern does not pay 2.

(*Witness.*) Perhaps I put that rather too broadly. Perhaps I should have said some ordinary railway stocks.

26,896. (*Chairman.*) Now, there is an immense number of corrections that you desire to make in the evidence given by the London County Council, and if you will mention any of those that you really think material I will take them, but I cannot undertake to go through them?—At Questions 579. I should simply like to point out a correction.

26,897. What do you say about that?—It seems to be assumed there that management by the London County Council would prevent conflict of authority. I suggest that the local sewers are vested in the vestries and district boards now, and with the exception of the embankments and one or two special thoroughfares, the County Council is not even the road authority. They would have to give notice to a district road authority before opening a street to lay or repair a pipe just as the companies do. There is that great difference between the functions of municipal corporations in the provinces and the London County Council, which appears to have been overlooked by the witnesses for the London County Council. They appear to have assumed that the London County Council stands on the same footing as a provincial corporation, but it does not.

26,898. No, it is neither the road authority nor the sanitary authority at present?—Nor the local sewer authority.

26,899. That is quite true, nor are any of the county councils of the metropolitan counties?—And still less of course the London County Council.

26,900. I do not know about still less?—Because they have not got the main sewers, and they have not got the Thames Embankment.

26,901. (*Mr. Balfour Browne.*) And they have no power as regards water supply?—They have no power as regards water supply.

26,902. (*Chairman.*) They would have to be made water authorities if there was to be that division which the London County Council agreed to. Now go on

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with your corrections?—The table as to supply per head put in by Sir Alexander Binnie at Question 1244 is somewhat misleading. I do not for a moment say it is intentional.

26,903. No, you are entitled to criticise, and criticise severely, if you like. What do you say about that?—The population estimated by the company in 1891, was calculated, taking the Lambeth Company alone at 7 persons per supply. The corrected quantity in 1891 of the consumption per head, is given by Sir Alexander Binnie as 32·34. That figure is basis on a different multiple. The company's figure was seven persons per supply. The multiple taken by the water examiner is only 6·24. As to the comparison, consequently, between the years 1891 and 1896, either column 2 or column 6 is wrong. The proper comparison is as follows. The corrected quantity in 1891 is given by Sir Alexander Binnie at 32·34, instead of 34·06 or rate per head in 1896 is given as 35·02, instead of 31·21 compared with 30·36 in 1891.

26,904. (*Major-General Scott.*) The common base of comparison would be 35·02 in 1896 and 34·06 in 1891?—Yes, that is taking the water examiner's multiple.

26,905. Both multiples in that Company being the same?—Yes.

26,906. It being 6·24?—Yes. If you alter Sir Alexander Binnie's figures, 32·34 to 34·06, you have a correct comparison.

26,907. (*Chairman.*) You altered them the other way just now by taking the lower multiple in each case?—No, I took the higher multiple in each case.

26,908. You took the multiple of 7?—The multiple of 7 instead of 6·24. In either case it shows the comparison to be incorrect. That is the only point.

26,909. You do not know whether that applies to all the other companies in that table, do you?—I think it must. I think the Report of the Local Government Board will show it. I have got that here.

(*Chairman.*) I am afraid Sir Alexander Binnie is not here to-day.

(*Mr. Balfour Browne.*) No, he is not here.

(*Witness.*) Take the New River Company, 1891.

26,910. (*Chairman.*) What does that show?—The Water Examiners figure in column 2 would be 29·44, so that it would no doubt, apply to all of them.

26,911. Your company seem to have suggested that in the future they would only want 25 gallons per head?—Yes.

26,912. Whereas, in fact, in 1896, they wanted 31·21—

(*Sir John Dorington.*) That is according to your own figure.

26,913. (*Chairman.*) According to the last figure you have just given 35·02 in 1896.

26,914. Yes, that is in the table, but you have corrected that to 31·21?—That was taking the basis that was laid before Lord Balfour's Commission.

26,915. I do not care what basis it was, I thought you told us that Sir Alexander Binnie's figures were wrong?—Yes.

26,916. And that instead of 35·02 for that rate per head in 1896, we ought to take 31·21?—I do not care which column is altered.

26,917. But then did you tell us that just now; is that right or wrong?—Yes, on the basis of the 1891 figures. He has taken two different bases.

26,918. (*Sir John Dorington.*) Which figure ought you to alter?—I do not care which.

26,919. But you have altered both. You have altered 32·34 into 30·36?—I am afraid I have not made my point clear. Sir Alexander Binnie was arguing that our supply was going up at a very rapid rate, because from 1891 to 1896 it had increased by three gallons per head, whereas it is not so; it only had increased by something under one.

26,920. (*Chairman.*) But in either case correct your figures as you like, it is much more than 25 gallons per head that you yourself suggested?—Yes.

26,921. Do you abandon that as being a wrong suggestion?—That was before I was connected with the Company

26,922. I dare say, but do you, now that you are connected with the Company, agree that 25 gallons per head is not enough?—I do.

26,923. That is all Sir Alexander Binnie was professing to prove?—No, Sir Alexander Binnie was giving our rate of increase as a very much greater rate than really exists.

26,924. There is not so great an increase as Sir Alexander Binnie put, but there is an increase?—Yes.

26,925. That is in your rate of supply per head, and it is far beyond what you yourselves estimated. I do not know, I am sure, when—I suppose in 1891—

(*Mr. Pember.*) It is '85 of a gallon.

(*Witness.*) The increase is 0·85 instead of over 2.

26,926. (*Sir John Dorington.*) How shall we leave these figures? Shall we leave 32·34 alone? If so, what shall we put for the 35·02?—If you leave the 35·02 and alter the other one to 34·06.

26,927. (*Major-General Scott.*) Had not you better drop the odd figures?—That is what I am suggesting.

26,928. You will make it much more simple by adhering to the figures 35·02 and 34·06. Those are the figures in the published tables?—Yes, that is the correction I suggest.

26,929. (*Chairman.*) Now go on with your corrections, please?—I think the next one I need trouble you with is upon Question 1377. That is with regard to the regulation—

26,930. What regulation?—The water regulation with regard to the depth at which pipes must be laid. There are two points there. Sir Alexander Binnie, I think, has perhaps, or at any rate it might be inferred from his reply, suggested that the Company are bound to place their pipes, by statute, at a sufficient depth to give a connection at 2 feet 6 inches. The regulation says nothing of the kind. The regulation deals with three conditions; first of all, pipes laid in the open ground—that is, laid in actual contact with the earth. A pipe so laid must be laid at a depth of 2 feet 6 inches. If that depth cannot be obtained, then, in the second case, they must not be laid in open ground. The third condition is that pipes in exposed conditions must be properly protected; such, for instance, as pipes crossing an open area.

26,931. But, pardon me, at Question 1377, Sir Alexander Binnie was suggesting regulations that might be made, and ought to be made, in order to secure pipes from being fractured by frost. Are you upon Question 1377?—Yes. I think I have rather misunderstood that question.

26,932. He does not say that is the regulation now, but that is what he suggests ought to be the regulation?—Yes, but I do suggest most strongly that depth has nothing whatever to do with protection against frost.

26,933. Do you mean to say if you laid your pipe upon the surface that it would not be more likely to freeze than if laid at a depth?—Not if you had sufficient draught. Our experience of 1895 showed this, that we had some hundreds of miles of pipe laid at two feet, which kept perfectly open through the frost. We had a 5-inch pipe laid at a depth of 3 feet 4 inches, and a 7-inch pipe laid at a depth of 3 feet 2 inches, both of which froze.

26,934. Because there was no current through?—Because there was no draught from them. I suppose such a thing as a 5-inch pipe or a 7-inch pipe freezing is practically unknown in such a climate as that of England.

26,935. (*Major-General Scott.*) I suppose you will admit that in this latitude, at a certain depth, the earth is never frozen?—At a very slight depth, as a rule.

26,936. The earth is not frozen?—The earth is not frozen.

26,937. Not in winter?—No.

26,938. Therefore, if you lay your pipes in the ground you have at any rate a certain advantage in keeping your temperature at a point at which the pipe will not be frozen?—It is a very slight advantage, because you must remember the temperature at which you turn the water into the pipe has a great deal to do with it. If you have a long continuance of very low temperature

you very soon chill the immediate neighbourhood of the pipe and locally freeze just the fringe of earth round the pipe, and therefore the pipe practically might be in the open air as well as at that depth.

26,939. You have a reservoir of heat in the earth at each side of that pipe which will extend to any distance?—Downwards.

26,940. Downwards and horizontally to any distance? —That, of course, depends to some extent upon the contour of the land.

26,941. It may, but at any rate that idea of sinking pipes has been very successfully adopted everywhere, has it not?—As a matter of fact we are laying all our pipes at a depth of 2 feet 9 inches.

26,942. Then you have thrown over your theory that it does not matter how deep your pipes are laid?—I believe it is a question of sentiment more than anything else.

26,943. Why is it sentiment—

26,944. (*Chairman.*) 20,000*l.* you have spent on pure sentiment—you must be a very sentimental company? —But it has, at any rate, all come out of the shareholders pockets, or the greater part of it. What we felt was this, that if another frost came and we had put our pipes 2 feet 9 inches down, we should be less open to criticism than if we had kept them at 2 feet. That is the sum and substance of it. You may regard the 20,000*l.* sunk as a kind of insurance against criticism.

26,945. I see, your withers are getting a little galled? —I am not sure that we are not getting accustomed to it.

26,946. Then go on with your corrections, please?—Question 1514, is the next important point, and that again is merely correcting a comparison of Sir Alexander Binnie's. The same correction holds good there. In columns 4 and 5, there are two different bases. The company, in 1892, based their estimate for 1931, on an assumed population of 1,136,141, and a supply of 25 gallons per head, or a total of 28,411,025 gallons. For the same population, the Royal Commission estimate 35 gallons per head as the average and, therefore, it might not be reached in all the districts, but for that same population, the supply would be 39,772,435 gallons, so that again if Sir Alexander Binnie had taken the proper figures, the same basis as he takes in his last column —

26,947. Which figure of his do you say is wrong?—The 52 millions should be 39,772,435.

26,948. It is very difficult to remember all these tables, but if I recollect aright, that estimate of 52 odd million gallons which your company would require in 1931, was based upon the figure that you yourselves had stated would be required in 1896, namely, 22 millions?—No, not if you take that. I may be wrong, but column 4 as I read it is represented to be the company's estimate. If so, I say it is not the company's estimate, but the company's estimate was 39,772,435. I do not think this is material except that, as a matter of fact, I do not admit these figures at all.

26,949. What figures?—Neither Sir Alexander Binnie's nor my correction, because he has taken simply the 18.2 of the Balfour Commission.

26,950. It is so difficult to go back to a table that was put in months and months ago. You say this table that you are now criticising professes to be based upon the company's basis?—Yes, and that is what I say it is not. If you take the company's basis throughout, you must correct that 52 millions to 39 millions. That is the whole point.

26,951. (*Mr. Pember.*) As far as you are concerned? —As far as the Lambeth Company is concerned. I only wish to keep the Commission straight on questions of comparison. That is the only object of making these corrections.

(*Chairman.*) I am not in the least saying that your correction is not valid, but it is difficult to remember what a table is about which we saw a year ago or more.

(*Major-General Scott.*) How did Sir Alexander Binnie get this figure of 52 millions.

26,952. (*Chairman.*) That is what I want to find out? —By altering the multiple. On the first figure, the figure in 1891 he has taken the company's multiple of seven, and in column 4 he has taken the multiple of 6.24. I say if you take one multiple for one column, you must take the same multiple for the other, that is all. The point is this that he estimated our requirements at a very much larger figure than they will be if the same basis is taken for both calculations.

26,953. I think that conclusion upon what your requirements will be in 1931 is based upon your own statement of what you had to give in 1896, namely that 22,793,000?—No.

26,954. Where does that come from. That seems to be what you yourself stated would be required in 1896? —But we did not state it. Sir Alexander Binnie there mixed up the evidence of other companies with the evidence which we gave before the Select Committee. As a matter of fact, we were not applying for an increased quantity of water in 1896, and, therefore, we had no occasion to make a statement to Sir Joseph Pease's Committee.

26,955. (*Mr. Pember.*) We were in Parliament in 1896?—We were in Parliament in 1896, but not for an increased take of water.

26,956. (*Chairman.*) It is quite true that neither for you nor for himself does Sir Alexander Binnie give any reference to justify that figure; but, however, you have made your correction?—Then I should like to point out on that same table that calculations founded on a comparison between any two periods are fallacious. If I may refer your Lordship to the Local Government Board Report you will find that the average daily supply of the Lambeth Company in 1881 was 17,645,470 gallons, in 1886 that had fallen to 17,582,417 gallons, so that you see if I took my estimate on that period of five years, I should go on in a diminishing quantity, although in the meantime the average population supplied had gone up from 459,000 to 537,000.

26,957. (*Major-General Scott.*) You argue from that that you ought not to take the short period, but that you ought to take as long a period as possible?—You ought to do neither, because if you take one year isolated from the others, you may get either an exceptionally good, or an exceptionally bad year. The period between 1891 and 1896 is an example of both. Sir Alexander Binnie takes a period of five years exactly 10 years later, 1891 to 1896, and he shows that there is an enormous increase in the consumption. I say if you take five years I am as much entitled to claim a diminution in future requirements as Sir Alexander Binnie is an increase. My recollection of 1891 is this: that it was a very cold year right up to June; 1896, on the contrary followed a year of severe frost, and was a droughty year.

26,958. If you take a period like 20 years, for instance, there are fluctuations due to accidental increases and decreases, and you divide those differences over 20 years?—But you must not take the terminals—you must avoid the terminals, because, otherwise, you might take a very rainy year the first year, and a very dry year the twentieth year, and that would not give you a fair comparison. If you were to take an average of a period of years in an interval of 20 years, I agree that that would be right.

26,959. Spread over 20 years, the probability of error is less than if spread over a shorter period?—I do not say that—not if you take terminals in each case.

26,960. (*Sir John Dorington.*) No, the terminal itself may be an exceptional period?—Yes, in either direction.

26,961. (*Chairman.*) Then, is there no means of forming any estimate from the past of what is likely to happen in the future?—The safest estimate is that of Lord Balfour's Commission—population. I do not think you can take any other reliable estimate.

26,962. Population, and so much per head?—Yes.

26,963. If you would kindly go through your list of corrections, and only insist upon what you think are material, I should be obliged?—I have done that, and there will be very few. But there are some very important corrections to be made financially.

,The witness withdrew.

[Adjourned till to-morrow at 12 o'clock.]

Mr. H. Wilkins.

20 Feb. '99

FIFTY-FOURTH DAY.

Tuesday, February 21st, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
 SIR JOHN EDWARD DORINGTON, Bart., M.P.
 ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
 ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary*.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
 Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
 Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. H.
 Wilkins,

21 Feb. '99

Mr. HARRY WILKINS re-called and further examined.

26,964. (*Chairman*.) We will go on with your corrections?—There are two small points in my yesterday's evidence to which I should like to refer. The first is as to the identity of charge not being synonymous with equality of burden. I merely wish to point out that at question 11,107 an independent witness, Mr. Leete, stated that for a house possessing the same accommodation at Kensington, he paid twice as much in water rate as, I think it was, in Highbury, although the scale charge was identical. The point was, that he was paying twice as much per gallon at Kensington as he was at Highbury, showing that equality of charge and equality of burden are by no means synonymous.

26,965. With the same rents you get a very different house—that is what you mean?—Yes, that is the point.

26,966. With the same rents in different parts of London, therefore, with the same charge, you get a very different amount of accommodation?—Yes, quite so.

26,967. That is clear?—Then the second point was as regards the supply in Croydon, which was transferred from the company to the corporation last year. I said I thought it was a case of the builder. I thought it was a question of fittings then, but I find it was a change of ownership. We received a letter from the borough engineer of Croydon simply saying, "As there is a change of ownership, and as the new owner is going to live in the house, he wishes to have our water. Will you kindly allow the transfer—ence to be made on Thursday morning?" Would you like to have the report I referred to yesterday.

26,968. What report is that?—On town holdings. I do not know whether you would like to have it. It deals with the question of the ultimate incidence of taxation.

26,969. I think we will keep clear of that, if we can. Will you kindly go on with the corrections you wish to make in the evidence?—With regard to the table handed in at Question 2245, I merely call attention to the fact that Mr. Haward omits the premiums to the amount of 50,953*l.* which the company had raised on their shares and stock.

26,970. He makes out your capital there to be 1,859,374*l.*?—Yes.

26,971. You say to that must be added, what?—50,953*l.* He is right with regard to the capital. But we had 50,953*l.* to be expended in capital purposes which was not bearing interest.

26,972. (*Sir John Dorington*.) To fill the gap of ordinary 7 per cent.?—No, it was on the 10 per cent. shares and 4 per cent. debenture stock.

26,973. (*Mr. De Bock Porter*.) It should be bracketed on to the 1,043,000*l.*?—No, I think the capital raised is correct, but not the capital expended. I think it should be made a separate sum altogether.

26,974. (*Chairman*.) He has put in premiums on debentures?—Yes; that was raised under the auction clauses.

26,975. Were not these other premiums of 50,000*l.* raised under the auction clauses?—Yes, part of it was raised under the auction clauses. The 1,141*l.* which he has put in are the premiums which are to be regarded as part of the authorised capital, under our Act of 1896. In addition to that, we received 50,953*l.* in premiums on shares and 4 per cent. debenture stock, which does not form part of the authorised capital.

26,976. (*Mr. De Bock Porter*.) And the 4 per cent. debentures?—And the 4 per cent. debentures. The figure with the exact amount was put in yesterday.

26,977. (*Sir John Dorington*.) Does not that form part of the 350,000*l.*?—It would be in addition to that.

26,978. Then that ought to stand as 400,000*l.*, ought it not?—No.

26,979. (*Mr. De Bock Porter*.) You wish it to be added to capital expenditure, but not to capital?—Quite so.

(*Chairman*.) The heading says, "Capital raised, authorised, and expended."

26,980. (*Mr. De Bock Porter*.) You mean that the 1,000,000*l.* odd should be increased at the bottom of the column?—Yes.

26,981. Increased by 50,000*l.*?—Yes, increased by 50,000*l.*

26,982. (*Sir John Dorington*.) Is not that sum the total of all the figures in that column?—That is so; but that is simply the total of the capital raised and authorised.

26,983. Yes; but all the figures in that column make up the total of 1,859,000*l.* P—Yes.

26,984. Therefore, if you add 50,000*l.* to the total without putting it in somewhere amongst the items, you would be wrong?—I think the proper way would be to put it in at the bottom as premiums raised, not forming part of the authorised capital.

26,985. A separate heading?—A separate item.

26,986. (Chairman.) I do not quite see what bearing that has upon the value of your company to a purchaser, because the company could not avail itself of the fact that it had spent that 50,000*l.*, inasmuch as it cannot produce any income. It only goes to swell the income of the authorised capital?—That is so. It is capital not bearing interest; and, therefore, the capital which does bear interest *pro tanto* derives a benefit.

(Chairman.) Quite true.

(Mr. Balfour Browne.) That is, it is a better security *pro tanto*.

26,987. (Chairman.) Yes, it is better secured. It does not raise the value of the undertaking in any way?—Not in the slightest degree.

26,988. Except in that way?—Except in that way.

26,989. (Mr. Pember.) It raises it to the vendors just to that extent?—By the value of the increased security.

26,990. (Chairman.) Then go on, please, with the corrections?—With regard to the table put in at Question 2258, there are some corrections. Mr. Haward has evidently taken the Firth returns to the House of Commons, and has omitted the first half-year for 1872. His figures for 1872 are for six months only. In the first half-year of that year there were 18,578*l.* raised.

(Mr. Balfour Browne.) If it would save Mr. Wilkins's time, and your time, I think these matters might easily be agreed. For instance, I find with regard to the 50,953*l.* at once from their returns that we are wrong—we have missed out that; but I think if Mr. Wilkins will put himself in communication with Mr. Haward, we might agree everything, and hand in a written statement, and so save your Lordship's time.

(Chairman.) That would, I think, save time. Of course these corrections are important; but still they are very minute.

(Mr. Balfour Browne.) They have a perfect right to have them on the notes somehow; but it seems a pity to waste time over them.

(Witness.) I am not quite sure that that would answer my purpose, because we might want ourselves to explain as we go along. Wrong inferences have been drawn from these figures; and the table put in at Question 2258 is a case in point.

26,991. (Chairman.) What is the wrong inference there?—The wrong inference there is that Mr. Haward has included in 1872, 1,000*l.*; in 1873, 10,500*l.*; in 1874, 10,300*l.*; in 1875, 6,000*l.*; and in 1877, 55,030*l.*: making a total of 82,830*l.*, which were raised by terminable debentures, and have been replaced by debenture stock.

26,992. I cannot follow any one of these figures in this table?—No; but they are included in the total.

26,993. Which total?—The amount of stock raised year by year. We raised a certain amount in permanent capital, and a certain amount in terminable debentures. Mr. Haward has added these together. When those terminable debentures are replaced by debenture stock, Mr. Haward adds them in again.

26,994. (Mr. Pember.) Will you show when that is?—Yes; you can see that.

26,995. (Chairman.) Take any one year; because if you fly from year to year in this way, it is impossible to follow you. He says that in 1873 you paid up in respect of stock taken at *par*, 23,592*l.*, and the premium value was 2,773*l.* Is that wrong?—What year is that, may I ask.

26,996. 1873. You have given a correction for 1872, and you say the figures for 1872 are for the half-year only?—Yes.

26,997. (Mr. Balfour Browne.) The statement seems to have been correct that it was paid up each year, whether it was terminable or not?—Certainly; that is to say the amount is correct.

26,998. It was paid up?—Part of it was subsequently replaced.

26,999. (Chairman.) But what part of it was? Do be a little definite please?—Take the year ending March 1873; the sum of 10,500*l.*, which was apparently included there, would be subsequently redeemed and replaced by permanent stock.

27,000. (Sir John Dorington.) And is included in the subsequent figures somewhere?—Somewhere.

27,001. But do you know where?—No.

27,002. Then how do you know that it is duplicated?—Because of the total.

(Mr. Pember.) If he tells us how he knows it is duplicated, then we shall get at it.

(Chairman.) Yes.

(Witness.) Then supposing we pass from that table for a moment, and take that handed in at question 2353. I think that will illustrate my point more clearly. You will see there that the capital apparently has been increased. If you take Mr. Haward's figures of 959,697*l.*, 200,000*l.*, and 49,500*l.*, you will get a total increase of 1,209,197*l.* That is the apparent increase in the company's capital.

27,003. (Mr. Pember.) Since when?—From 1872 to 1897. Now, if you take the figures of the capital of the company on the 30th of September 1871, from the company's accounts, the figures then were, including bond debt, 954,583*l.* On the 30th of September 1897, it was 1,851,141*l.*, showing an increase in the 28 years of 896,558*l.*

27,004. What was the last year you took?—The 30th of September 1897. I believe those are the dates which Mr. Haward has taken.

27,005. Then how does that differ from Mr. Haward's result?—By something like 300,000*l.*

27,006. Do you mean he gives 300,000*l.* too much?—Yes; because he has included the amount we have raised in the meantime in terminable debentures which have been redeemed or replaced by debenture stock.

27,007. (Mr. Pember.) And it included the debenture stock, too?—It included the debenture stock too.

27,008. You find that, I suppose, by making up your own accounts, and seeing that the exact difference was the sum of those terminable annuities?—Yes, that is so; and I have traced it also by the Firth return, from which Mr. Haward has evidently taken his figures.

27,009. (Mr. De Bock Porter.) Could you in each year show the debenture stock that was only in replacement of this bond debt?—The whole of the terminable debentures have been redeemed and replaced by debenture stock. It would be the sum of it that would be that amount.

27,010. But could you show us how much of this terminable debenture stock was issued in each year?—Yes, I could do that.

27,011. (Mr. Pember.) Will you forgive me, but I am trying to find it out. Will you tell us how your figure is arrived at?—Yes.

27,012. How is your 200,000*l.* or 300,000*l.* made up which you say he is wrong in? I see, on your paper you say this, and perhaps you will give the noble Lord a little explanation about it:—"Mr. Haward has omitted "to explain (a) That a bond debt of 230,950*l.* in 1871 has "since been replaced by permanent capital." P—Yes; I was going to say that my first figure, the figure that I gave you as the amount of capital on 30th September 1871, included a bond debt of 230,950*l.*, which has been replaced by permanent debenture stock. If you add that 230,950*l.*, and the 82,830*l.*, and deduct the 1,141*l.* premiums forming part of the capital, that ought to balance the discrepancy of 312,639*l.*

27,013. That is what I mean. If you find that the discrepancy is exactly balanced in those sums, it goes very far to justify the inference that you are right, and that Mr. Haward is wrong?—I have not actually got the sum here, but I have no doubt that that is so.

(Mr. Pember.) As to what turns upon it, for the purpose of your inquiry, my Lord, that I cannot follow.

(Mr. Balfour Browne.) Nor can I.

(Witness.) Excuse me, it has a bearing.

Mr. H. Wilkins.

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See 28,446.

Mr. H. Wilkins. 27,014. (*Chairman.*) I am speaking really from memory, now, of many months back, or a year back; but the inference that Mr. Haward wished us to draw was this, that the capital of the water companies had been raised in an extravagant way?—That is so

27,015. And that the shareholders had got a large benefit in premiums, which, it was suggested to us, ought to go as a set-off against their claim to back dividends?—Yes.

27,016. As they pocketed all these premiums, they ought to relinquish back dividends; that is how it was put to us?—That is the point I was coming to.

27,017. It was a desirable control, suggested Mr. Haward, that we should interfere and bring that about?—

(*Mr. Pember.*) If one had done it twenty times over, it was legal at the time it was done.

(*Mr. Balfour Browne.*) That is not the question.

(*Chairman.*) Legal, but inequitable—that is the argument put before us, and that is why the arbitrator is to have the powers of an Act of Parliament.

(*Mr. Pember.*) I do not understand that.

(*Witness.*) The point is this, my Lord, that this 254,000*l.* or thereabouts could not command a premium value. It was placed, merely for short periods, at the current rate of interest of the day.

27,018. (*Chairman.*) What right have you to levy these large sums of money under redeemable debentures?—Under varying Acts of Parliament.

27,019. Which allowed you to issue them?—Yes.

27,020. Not under the auction clauses, but as temporary loans?—Yes. Practically, the explanation may be shortly taken to be this. It was in times of financial difficulty, when the public would not subscribe for our shares, and we were bound to find money somehow, to fulfil our statutory obligations, and, therefore, we entered into negotiations with large insurance offices to lend us money for one, two, or three, or four years.

(*Mr. Pember.*) This was long before the auction clauses were invented.

27,021. (*Chairman.*) Was it?—Yes.

27,022. (*Mr. De Bock Porter.*) Was it a fixed rate of interest?—Practically. It was $4\frac{1}{2}$ per cent. latterly.

27,023. And five in the earlier years?—Yes, five and $4\frac{1}{2}$. I am not quite sure, but I think $4\frac{1}{2}$ per cent. was the lowest rate we borrowed at.

27,024. (*Mr. Mellor.*) Have you got that power now?—No.

(*Mr. Balfour Browne.*) You will notice, my Lord, that the criticism of Mr. Wilkins on the last table—which was true with regard to the 50,000*l.*—is corrected here, because in the last column of the table handed in at Question 2353 you will find Mr. Haward gives him credit for the 52,094*l.*

(*Witness.*) That is quite so.

27,025. There is no doubt about that?—That is right.

27,026. (*Chairman.*) I do not know what that 52,000*l.* is. That is the total of premiums carried to capital account, is it?—Yes.

27,027. Whereas I understand you to say there was much more than 52,000*l.* carried to capital account?—No, that is the amount.

27,028. 52,094*l.*?—Yes, that is right. Then will you allow me to go back to the table handed in at Question 2258. I think I have illustrated now the point that the capital is overstated. The premium value in that table is very much overstated by Mr. Haward, firstly, for the reason I have stated, that the terminable debentures could not command a premium, and, secondly, because the price at which he has valued the shares—the Stock Exchange quotations—would, of course, include not only the dividends but all the other rights of the shareholders, which included a right to take up a certain amount of capital at par as it was issued. Therefore the price quoted on the Stock Exchange would include premium value as well as a dividend.

(*Mr. Balfour Browne.*) Discounted by the chance that there might be no stock issued for 10 years.

27,029. (*Chairman.*) Do you mean that in the table handed in at Question 2258, the premium values are estimated by the Stock Exchange price of the day?—I suppose so; I am assuming that. I do not know whether I am right.

27,030. Mr. Haward alleged that his table was a continuation only of returns presented to the House of Commons?

(*Mr. Balfour Browne.*) It is so.

(*Witness.*) Yes, that is the Fifth return.

27,031. (*Chairman.*) Mr. Haward does say at Questions 2259 and 2260, "That shows the total amount of premiums which have gone into the pockets of the shareholders at 1,853,288*l.* (Q.) That is an estimate, I suppose, is it? (A.) That is an estimate, taken, of course, on the basis of the market price of the stock at the time the stock was taken up"—I merely wish to have this corrected. I do not think it has any bearing really upon your inquiry, because if, assuming that the amount of premium had been raised, it was strictly in accordance with the Acts of Parliament.

27,032. The County Council suggested to us that it would be a proper control of these companies to revise their capital account, in view of all these advantages that the shareholders had?—That is a proposition that I should think it would be impossible to support either in equity or law.

27,033. (*Mr. Pember.*) At all events, you protest?—I certainly do. It is an unheard-of proposal.

(*Chairman.*) It was a strong proposal.

27,034. (*Mr. Pember.*) And, as a fact, it does not exist to the full extent which he professes?—No.

27,035. (*Chairman.*) Then go on with your corrections, please?—At Question 2404 there was a table put in by Mr. Haward. I merely wish to refer to a subsequent table put in at Question 2621 by the same gentleman, in which it will be seen that his first inference is disproved by his subsequent statement.

27,036. You want to compare the table at question 2404 with the table at Question 2621, you say?—Yes.

27,037. He says, in the table handed in at Question 2404, that you spent on management 610*l.* per million gallons?—In one year.

27,038. And at that time you were paying dividends at 9*½* per cent.?—Yes. Then he goes on in subsequent evidence to suggest that the cost of management has gone up with increased dividend. All I wish to point out in connexion with that is that the highest cost in the Lambeth Company's case was in the year 1884-85, when the dividend was at the rate of 7*½* per cent. You will see in 1884 the cost was 729*l.* 15*s.* 11*d.* per million gallons, and in 1885, 725*l.* 8*s.* 4*d.* per million gallons, but that in 1897, it had gone down to 610*l.* per million gallons, so that there is no justification for the inference that he wished to draw.

27,039. Your dividend had gone down, had it, in that time?—No, the dividend was increased, but the cost of management per million gallons had gone down.

27,040. What was your dividend in 1896-97?—It is correctly stated—9*½*.

27,041. What had it been in 1884-85?—In 1884-5, each time it was 7*½* per cent.; it had increased, practically, 2 per cent. in 1896-97.

27,042. So that you say, although your dividend went up, your expenses of management went down?—Quite so.

27,043. Go on, please?—The next one is at Question 2494 with regard to Mr. Smith's agreements. I do not know how far you would care to go into that.

27,044. I do not think we do wish to go into that?—I am prepared to show that, in the case of the Lambeth Company, we are now making nearly 20,000*l.* a year more than would suffice to pay the interest, but I take it that that is a matter that you will scarcely consider germane to the inquiry. At Question 2691, there is a question that merely relates to the comparative rates of interest at which the companies and the London County Council can borrow money.

27,045. That is material?—In the year 1896 the company obtained an Act of Parliament which required them to raise their money on such a uniform rate of interest as the governor of the Bank of England should

fix as being calculated to raise the money at par. In August 1896, we were in communication with the governor of the Bank of England, and he fixed the rate at 3 per cent.; he explained the reason, namely, that if the sum had been raised in one amount, if the whole 490,000*l.*, had been raised at one time, then he would have fixed the rate at 2*l.* 15*s.* per cent.; but inasmuch as he had to fix a uniform rate, possibly extending over 10 years, he thought it right to take into account possible fluctuations in the bank rate, and, therefore, he fixed the uniform rate at 3 per cent.

27,046. (*Mr. Mellor.*) At what rate do you suggest that the County Council could raise this money?—*Mr. Haward*, I think, put it at 2*l.* 12*s.* 6*d.*, so that the difference is very much less than has generally been supposed, I think.

(*Mr. Rickards.*) Perhaps I might remind you, my Lord, that the Chelsea Company at that time got power to raise 50,000*l.* by debenture stock, and they were going to raise it all at once. The governor of the Bank of England fixed the rate at 2*l.* 15*s.*

(*Mr. Balfour Browne.*) That is stated on the very page by *Mr. Haward* that *Mr. Wilkins* has been referring to.

(*Chairman.*) *Mr. Haward* said that the Chelsea case was the only one in which the governor of the Bank of England had fixed the 2½ per cent. as the rate for new debenture stock.

(*Witness.*) That is so, and I am explaining the reason why it was not so fixed in the Lambeth case.

27,047. (*Mr. Balfour Browne.*) As a matter of fact it was 3 per cent. in your case?—Yes, it was 3 per cent.

27,048. (*Mr. Pember.*) Did you get a premium?—We got an average premium of about 2*l.* 4*s.* after paying expenses; the highest tender we received was 107*l.*

27,049. (*Chairman.*) You did not accept that then; that was the highest tender. What was the average premium?—The average was 102*l.* 14*s.*

(*Mr. Pember.*) I do not think the expenses should be deducted for our purpose now—ought they, my Lord—because what you want to find out is what the public will give for the 3 per cents.

(*Chairman.*) Yes.

(*Mr. Pember to Witness.*) You say you found the public would give 107—

(*Mr. Balfour Browne.*) No, that was the highest.

(*Witness.*) It was a small amount; that was the maximum, and the price went down to something under 102 for a small quantity.

27,050. (*Mr. Pember.*) You will forgive me, I dare say, my Lord. (*To the witness.*) Could you tell us what was the average amount that you realised?—It would be about 2*l.* 14*s.*

27,051. That is after expenses have gone on?—The expenses of issue would not be very great; I question whether it would increase the rate by a shilling; it might.

(*Mr. Mellor.*) Five per cent.

(*Witness.*) One shilling per cent.

27,052. Would the 1*s.* per cent. include the stamp?—There is no stamp duty.

27,053. (*Mr. Pember.*) Then this 2*l.* 14*s.* may be taken for—I should think so.

27,054. (*Mr. Mellor.*) In what does the expense consist?—The expense consisted of advertising, stamp duty on the allotment letters, and such matters as that.

27,055. That is what I meant by stamps?—There was a fee for obtaining a quotation of new stock on the Stock Exchange.

(*Mr. Pember.*) I will take the liberty of making it 2*l.* 15*s.* by adding on that shilling of which he spoke, because it is so much easier to do the sum then.

(*Witness.*) I am speaking only from memory.

27,056. (*Mr. Lewis.*) I see your debenture stock can be purchased at the present time at 2*l.* 16*s.* per cent.?—That would be about the sum. Which debenture stock are you speaking of?

27,057. I am speaking of your 4 per cent. debenture stock?—That stands now just under 140.

27,058. (*Mr. Pember.*) The honourable gentleman means, does it pay 2*l.* 16*s.*?—Yes, that would be about it.

27,059. (*Chairman.*) Go on, please?—Upon Question 3461—this is in *Mr. Gomme's* evidence—I wish to point out with regard to the last column in the second of his tables, that he there gives the proportion per cent. of increased revenue applied to expenditure as 40, and to dividends as 60. I should like to supplement that by pointing out that the total share and loan capital of the company had increased in the meantime by 87 per cent.

27,060. I do not quite see that that affects the inference from the table?—The table itself is prepared in rather an unusual way. If you take the actual increase in the 25 years the percentage would slightly differ, but the main point was to supplement *Mr. Gomme's* information by the increase in the percentage of capital.

27,061. (*Mr. Balfour Browne.*) I think that is dealt with in the table handed in at Question 3487, is it not—increased dividend due to increased capital you see there?—Yes, but it does not give the percentage of increased capital.

27,062. It does not give the percentage but it does the amount?—Yes.

27,063. You have only worked it out in your percentages?—Yes, that is all.

(*Chairman.*) *Mr. Gomme's* inference was, you know, that you spent too much on dividend and not enough on expenditure.

(*Mr. Pember.*) I think our expenditure went up in proportion to our dividend—that was *Mr. Haward's* view. The two things cannot co-exist, my Lord, can they?

(*Witness.*) I do not quite follow the value of that table, but I merely wish to point out, as I say, that the capital had increased in a greater ratio than the expenditure or the profit.

(*Chairman.*) I do not see the bearing of that upon the table at all. The table says, here is a certain average increase in annual revenue, a certain average increase in annual expenditure and a certain balance therefore available for interest and dividends.

(*Mr. Pember.*) That is what he says. He says the conclusion I have to draw is that a very large amount of revenue goes to payment of interest or dividends.

(*Chairman.*) Then I ask him why should it not—they have not reached their statutory limit and he says it is simply one of the grievances that the consumers have to suffer. He is asked why is that amount not to go to revenue if there is enough spent on maintenance; that is just the question says *Mr. Gomme* whether there is enough spent.

(*Mr. Pember.*) *Mr. Haward* on the other hand said we spent too much in maintenance when we grew rich.

(*Sir John Dorington.*) Too much on management.

(*Chairman.*) *Mr. Haward* said when you have reached your maximum then you become extravagant on both maintenance and management I think.

(*Witness.*) Yes, that was so.

(*Chairman.*) *Mr. Gomme* says meanwhile until you reach your maximum you allot an undue amount to the dividends.

(*Witness.*) If you take 87 per cent. as the increase of capital and an increase of 60 per cent in the dividends and interest.

(*Chairman.*) The 60 per cent. is not an increase in the dividends and interest, but a proportion of the increase of revenue which is allotted out of the increase of dividends. It does not signify in the least what capital has produced that income, I think.

(*Mr. Pember.*) Quite so.

(*Chairman.*) I do not see the bearing of your correction I confess; it must be my fault—do you see the difficulty I have.

(*Witness.*) I must confess I do not quite see the value of the table; I simply want to put this in to make it complete to show that the 60 per cent. is not an undue increase.

(*Chairman.*) The intention of the table as I understand it was this—assume that this dividend which the water companies have been dividing for so many years has been a genuine dividend, it has been a dividend that has been only got by starving expenditure. Therefore any arbitrator who comes to consider what the real income of the company is will cut it down.

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(Witness.) I do not follow that point.

(Mr. Pember.) That would be answered by the condition in which the companies are found when the arbitrator comes to find out by the fact, it may well be that without starving it at all we paid 60 per cent. at one period.

(Chairman.) Yes, it might be but that is the inference which Mr. Gomme's ought to draw.

(Witness.) That, of course, is not a financial question, that would depend upon engineering points as well.

(Mr. Pember.) It seems to me that the real answer to the table is to ask Mr. Wilkins whether the management and maintenance have been starved?

(Chairman.) Yes, that is so.

(Witness.) They certainly have not. Due attention has been paid to economy, but the directors have never hesitated to spend any money necessary for keeping up their works.

27,064. I suppose that a board of directors, on the question whether to buy a new expensive engine when there is rather a wheezy old engine in use, say: We will let the wheezy one go on for another year or two, and pay the full dividend next year—is that a tendency of the board?—No, it is not because the wheezy engine makes itself felt on the coal bill.

27,065. (Mr. Mellor.) But if you are paying your full dividend, and have paid your back dividends, any extra or unnecessary expenses of management come out of the consumer's pocket?—But we are not in that happy position yet.

27,066. (Major-General Scott.) Sir Alexander Binnie's evidence was to the effect, I think, that at the time of the Balfour Commission the works were not in the state that they ought to be, and that subsequently, in consequence, partly of the Report of Lord Balfour's Commission, there was a very large expenditure on works in order to bring them up to a state of efficiency; I think that was the pith of Sir Alexander Binnie's evidence?—If that was so, I should contest it most strongly as far as the Lambeth Company was concerned.

27,067. He illustrated that by handing in a statement showing the immense capital expenditure which had been incurred, or was about to be incurred, subsequently to the Report of the Commission?—Yes, but that, I think, was set right. In regard to the 490,000*l.* that we were raising, there were 200,000*l.* for storage reservoirs, there was something like 70,000*l.* for further filtered-water reservoirs, and the remainder was for mains, and so on, for the growth of the business.

(Mr. Pember.) And shortly after he said that Sir Alexander Binnie admitted, and, in fact, insisted, that the expenditure now contemplated by the companies would last for the next 15 years.

27,068. (Mr. Mellor.) As I understand, you have no depreciation fund?—No, renewals are paid wholly out of revenue; so that revenue is the depreciation fund.

27,069. How about buildings?—The same way; they are renewed and kept in repair.

27,070. (Chairman.) I see, now, what Mr. Gomme's purpose was in these two tables by looking at his evidence; he contrasts the proportion of increased revenue applied to expenditure and dividend before the Government audit and after the Government audit, and he points out that after the Government audit more is devoted —?—Yes, but his inference is not borne out there with regard to the Lambeth Company, I think. He shows that since the Government audit a larger proportion has been allocated to expenditure, and a smaller one to dividends, than previously in the Lambeth case.

27,071. Yes, that it explained, that is inconsistent with his argument?—In other companies, you see, the case is reversed. It is simply impossible to draw any general inference, because you must take into account the relative growth of the company's business.

(Chairman to Mr. Gomme.) Might I ask you whether the object of these two tables was not to show that the auditor had thrown more of the increased revenue upon expenditure and less upon dividends?

(Mr. Gomme.) No, my Lord. The object of these tables was to show that during the period from 1871 to 1891 a very considerable amount had been spent upon dividends. Then, in the table handed in at Question 3487 —

(Chairman.) But I am on the tables handed in at Question 3461.

(Mr. Gomme.) The tables are preparatory to the table at Question 3487. At Question 3487 it is analysed, and the amount which is spent upon old capital and the amount which is spent upon increased capital is shown. In the case of the Lambeth Company it is $6\frac{1}{2}$ per cent. due to new capital, and $1\frac{1}{4}$ per cent. is increased dividends on the old capital.

(Chairman.) You certainly did suggest, Mr. Gomme, that the auditor had the power of compelling the companies to charge certain items of expenditure to revenue, instead of to capital, which, of course, would have a tendency to increase the proportion of their revenue applied to expenditure.

(Mr. Balfour Browne.) And it is true, my Lord, that, comparing those two tables, the expenditure was 35 per cent. in the first table and 40 per cent. in the second, while the dividend was 65 per cent. in the first table and 60 per cent. in the second. So, I think, that bears out what your Lordship inferred.

27,072. (Chairman.) That was the suggestion, you know, that the audit had had the effect of obliging the companies to put to revenue account, instead of to capital account, certain items of expenditure, thereby increasing the amount of revenue devoted to expenditure, and diminishing the amount of income devoted to dividend?—There is no truth in that.

27,073. As far as the Lambeth is concerned, it is true?—We have not altered our system of accounts at all. We have never had a difference of opinion with Mr. Stoneham during the whole time—very nearly 30 years.

27,074. As far as your company is concerned, it is true; it appears from 1853 to 1870 you spent of your increased income 35 per cent. on expenditure, and 65 per cent. on dividends. When the auditor comes to lay hold of you, you only spend of your increased revenue 40 per cent. on expenditure and 60 per cent. on dividends?—That is not a case of *post hoc propter hoc*. The question is this; after 1871 we had an enormous development of small property, and, consequently, our average rate of profit went down. That is the prosaic explanation. That was also intensified by the Dobbs' Decision and the Water Rate Definition Act. This is not a case of the auditor at all. This is a case of the way in which the district develops. You will find that is illustrated by other companies, I think, where there is exactly the opposite effect.

27,075. It is true; I was caught by the Chelsea, which is the very first where the operations are the reverse way?—It entirely depends on the growth of the district. During that time in the case of the Chelsea, the old slums were removed—and I have no doubt that would be the explanation—and mansions took their place.

(Mr. Pember.) The East London is the other way, 44 and 56 instead of 51 and 49.

(Mr. Claude Baggallay.) And the New River is the other way.

27,076. (Chairman.) Yes. The suggestion by Mr. Gomme was that your dividend accounts in the past ought to be revised—I think that was the phrase?—Yes, that was so.

27,077. By adding what the auditor afterwards added and charging the revenue with the proper amounts for expenditure, and so cutting down your apparent profit income. That was the suggestion, that either some controlling authority, or possibly the arbitrator in the event of purchase, must go through that operation and revise your revenue accounts?—That is so. There is no foundation for that. When I took office, Mr. Stoneham expressed his satisfaction at the way in which the accounts had been kept previously to my assuming the office.

(Mr. Pember.) Would it not be the other way, because if the auditor has forced us from 1871 to 1897 to do what your Lordship suggests, would that not show that for 25 or 26 years at least we have been doing our duty, and that our income has been properly earned.

(Chairman.) It certainly would since the audit.

(Mr. Pember.) That is for 27 years.

(Chairman.) But you see the County Council claim to go back to an earlier period.

(Mr. Pember.) Let them go back.

(Witness.) I do not think an arbitrator would listen to that.

(Chairman.) I do not know; there are persuasive tongues on the side of the County Council.

(Witness.) I am speaking of an arbitration under the existing law, of course. The next correction is rather a complicated case, it is at Question 3792. Mr. Gomme is inaccurate when he says the capital expenditure of the company had reached \$13,178*l.* 8*s.* 1*d.* I can show this from Mr. Gomme's own statement at Question 3769, where he put in a table of the capital expenditure included in the company's present total.

27,078. I think this was corrected. I have made a note, I see, to Questions 4347 to 4372, and 4585 to 4591 where this was corrected?—No, he still sticks to the 313,000*l.*

(Mr. Pember.) That is the famous 87,000*l.* odd. Mr. Gomme admitted afterwards that we had not paid dividend on anything beyond 226,000*l.*

(Witness.) That is a different question. This question now is an accusation practically that the company have brought forward 313,000*l.* as capital, whereas Parliament only allowed them 200,000*l.* or thereabouts.

27,079. 226,000*l.*?—Yes.

27,080. That is what I said?—First of all the 313,000*l.* was never brought forward. If your Lordship will kindly refer to the table relating to the Company put in at question 3731 you will find there that Mr. Gomme gives the capital expenditure up to 1849. It would be the three first items, and they come together to 307,352*l.* That 307,352*l.* is the capital expenditure to the end of 1849, that is to say, a year and a half after the Act of 1848 was passed, so that the total brought forward is wrong to start with; briefly, the facts are these: In 1848, prior to the passing of the Act of that year, the company's share capital was 143,800*l.* with authorised borrowing power, exercised, to the amount of 69,830*l.*, and unexercised, to the amount of 12,320*l.*, making a total of 226,000*l.* The expenditure on the capital account to the same time was 296,346*l.*, leaving an over-payment of 70,346*l.* which had been met by the application of profits to capital expenditure instead of to dividends. These figures were laid before Parliament in 1848, and although the Bill was opposed, no direction was given as to the adjustment of the capital account. So far from disallowing any capital expenditure Parliament expressly continued in terms the unexhausted borrowing power of 12,320*l.*, stereotyping the accounts of the Company as presented to Parliament; but in 1854, the Company of its own notion wrote off 60,000*l.* as the estimated value of the works which had become annihilated since 1785. Thus in 1854 more than 20 per cent. of the entire capital expenditure up to the passing of the Act of 1848 was written off.

27,081. (Chairman.) I have done my best to follow you, but I do not quite see how you answer Mr. Gomme's charge, that whereas Parliament only gave you 226,000*l.* of capital, including your mortgage and your borrowing power, you continued to bring forward 313,178*l.*, namely, 87,000*l.* too much?—That was the capital power before the passing of the Act. Then we had outrun the constable, and we had to go to Parliament. We raised 200,000*l.* by shares, or, at least, we had power to. The first thing we had to do was to repay our capital account. Precisely a similar thing occurred in 1896 in our Bill of that year.

27,082. Do not fly off to 1896 please?—Will you allow me to give an illustration?

27,083. I do not want illustrations. I want, please, the facts about this capital account of 1848. Is it the fact that you continued to carry out the sum of 313,178*l.* as being your capital account from year to year?—No, what we carried forward was 296,346*l.*

27,084. That is 70,000*l.* more than Parliament had allowed you?—No.

27,085. Parliament had allowed you 226,000*l.* only?—Yes, and we had spent 70,000*l.* beyond that. We went to Parliament then for money to repay that, and to carry on further works. We had no power to spend this out of revenue. A statutory company has no power to pay for capital works out of revenue. In fact, since the Act of 1871 the auditor would not allow us to do so.

27,086. (Mr. Mellor.) You mean that you had paid this money out of revenue?—We had advanced it out of revenue.

27,087. That is to say, you had advanced 70,000*l.* out of revenue?—Yes.

27,088. Then you went to Parliament and asked for leave to repay that money to revenue and add it to capital—that is what you mean?—Certainly. We issued our statement of accounts exactly in that way.

27,089. (Chairman.) When was that?—In 1848.

27,090. Does that appear in the Act of 1843?—It is not necessary.

(Mr. Pember.) What does appear?

(Mr. Balfour Browne.) All that appears is that the 216,000*l.* or whatever it was was allowed by Parliament.

(Chairman.) 226,000*l.*

(Witness.) That was pre-existing capital.

27,091. (Sir John Dorington.) Of which 70,000*l.* had already been spent?—In addition to that.

(Mr. Balfour Browne.) And when they raised new capital they paid back that which had been spent out of revenue.

(Witness.) It is done every year.

27,092. (Major-General Scott.) Did that Bill give you power to borrow money for the purpose of that repayment?—Not for the purpose of that repayment; it was not necessary.

27,093. It gave you power to borrow without any definite statement of what it was for?—Yes, it was for the works we then contemplated—carrying our intake to Ditton and for the general purposes of the Company, and one of the great purposes was, of course, to adjust the capital account—every statutory company does that every year.

27,094. (Mr. Mellor.) The question is, was this matter distinctly brought to the notice of the Committee of Parliament?—It was by our witness, Mr. Simpson, our engineer.

(Mr. Balfour Browne.) My Lord, the point was that upon old works Parliament authorised and fixed the capital at 226,000*l.*, and allowed them to borrow 200,000*l.* in addition for new works.

(Witness.) Yes.

(Mr. Mellor.) That is the 1848 Act.

(Mr. Balfour Browne.) Yes, the 1848 Act.

(Mr. Pember.) It does not say that.

(Mr. Balfour Browne.) It does indeed, it uses the words "new works."

(Witness.) Yes, but I think your first part was rather misleading, was it not, with regard to the 200,000*l.*

(Mr. Balfour Browne.) No, it declared the capital for old works to be 226,000*l.*

(Witness.) Quite so, but the further capital I was thinking of.

27,095. (Chairman.) But you do not meet the figures of Mr. Gomme, you talk about 70,000*l.* that have been spent out of revenue and lent as it were to capital?—Yes.

27,096. That would make 296,000*l.* only?—I say that Mr. Gomme's 313,000*l.* is wrong.

27,097. Is it wrong?—Yes, according to his own figures, as you will see if you look at the table handed in at Question 3731.

27,098. Never mind his own figures?—His figures there are 307,000*l.* to the end of 1849; and if to the end of 1849, we had only spent 307,000*l.*, we could not have spent 313,000*l.* to the end of 1847, the amount which was laid before Parliament.

27,099. Have you got the Act of 1848 there?—Yes.

27,100. Just let me look at it?—I would draw your Lordship's attention to the 12th section onwards. [*Handing copy of the Act to the noble Lord.*]

27,101. (Mr. Lewis.) When you speak of taking this amount out of revenue, I suppose you really mean you borrow it because your revenue account would not admit of a payment of 70,000*l.*?—That is just what it did.

27,102. (Mr. Pember.) Not in one year?—No, it was spread over something like 20 years. The fact was that our company at one time could not raise the money on any terms, and the directors and their friends, who were practically the whole of the shareholders, had such a faith—they, in themselves, alone having a faith

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in the inherent future welfare of the company—that they took no dividends for a period of 20 years. That was stated in Mr. Simpson's evidence to the Committee in 1848. They put in all the capital they felt they could afford, and rather than put their hands in their pockets for further capital and take interest they forewent the interest.

27,103. (Mr. Lewis.) And then in what form did you credit revenue with that afterwards?—The bulk of it was written off for annihilated works, 60,000*l.* was written off.

27,104. What amount was put to capital?—Only to the extent of 10,000*l.*

27,105. (Chairman.) Did they come and claim before 1848 that the capital was 313,178*l.*?—No, they claimed that they had spent 296,346*l.* They admitted that their capital was as Mr. Gomme states, and they wanted to raise 200,000*l.* to adjust their capital account and to pay for new works.

(Mr. Pember.) Clause 13 is the clause by which they got power to raise that 200,000*l.*, it does not say what it is for.

(Witness.) No, it is for the general purposes of the company; it is common form.

(Chairman.) And then in clause 15, if you do not mind looking at it —

(Mr. Balfour Browne.) It is not for the purposes of the company; it is for the purpose of the Act.

(Mr. Pember.) Clause 15 says, "The new shares created for the purposes of this Act shall be of such value," and so on, and then, "all such new shares shall be considered as part of the general capital of the company."

(Witness.) If we were not to carry forward 296,000*l.*, a special section would have been necessary in that Act to readjust the capital account.

(Mr. Mellor.) Was not the company by this Act dissolved and reconstituted?

(Mr. Pember.) It was dissolved and reconstituted.

(Mr. Mellor.) I notice at the end of section 1 there is an indemnity.

(Mr. Balfour Browne.) Is that what you relied upon—the indemnity?

(Witness.) No, not at all. I rely upon the common everyday practice.

27,106. (Chairman.) Have you got your published accounts of this period?—They were not published. I have referred to the accounts.

27,107. What does Mr. Gomme mean by saying that the 313,178*l.* has been perpetually brought forward in the published figures?—Mr. Gomme was good enough to refer me to the figures. I asked him where he got the figures from, and he referred me to a table which was put before the Select Committee on the Government Bill of 1852, and carried the expenditure, not up to 1847, but up to 1851. I think Mr. Gomme would admit that.

(Mr. Gomme.) Yes.

(Chairman.) I should like to see any account in which this sum of 313,178*l.* appears.

(Mr. Gomme.) I have before me the figures as taken out from the 1852 evidence. There are a series of figures beginning in 1827 and finishing in 1850. The last amount is 368,000*l.* odd, and the 1848 figure is the 313,000*l.* to which we have alluded.

(Chairman.) What is it you are reading from?

(Mr. Gomme.) I am reading from a printed account of my own.

(Chairman.) That is your compilation.

(Mr. Balfour Browne.) From the evidence of 1852.

(Mr. Gomme.) Yes, from the evidence of 1852.

(Mr. Pember.) That is his own compilation.

(Mr. Gomme.) No, it is simply a quotation of the evidence of 1852.

(Mr. Pember.) Let us look at the evidence of 1852; I should like to see it.

(Witness.) It is quite right, but the statement there is not capital expenditure.

(Mr. Pember.) What is it then?

(Witness.) I do not know. It is a mixed up statement of some sort or other.

(Mr. Gomme handed a book to the noble Lord.)

(Chairman.) This you say is a compilation from the evidence of 1852.

(Mr. Gomme.) Yes, my Lord.

27,108. (Chairman.) I am bound to say I cannot see my way either through the charge or through the answer. (To the Witness.) The charge is that you have entered 87,000*l.* too much in your capital account?—If your Lordship will allow me to give an illustration from our 1896 Act, I think it will make it clear. In 1896 we had to go to Parliament for increased capital.

27,109. No, nothing that happened in 1896 can make clear what happened in 1848?—I think it will illustrate my point exactly.

27,110. (Mr. Balfour Browne.) I do not think it would, because, as Mr. Mellor has pointed out, in that year you were reconstituted a different company—in 1848?—Yes.

27,111. In 1896 it was only a continuance of the same company?—Yes; but it would have been necessary to have readjusted our capital account on the evidence if the intention of Parliament was to cut down the capital account. As a matter of fact, the company did subsequently write off 60,000*l.*

(Chairman.) Can Mr. Gomme tell us where in the evidence of 1852 that figure of 313,178*l.* appears?

27,112. (Mr. De Bock Porter.) As regards this 70,000*l.*, I understand that the 70,000*l.* had been supplied out of revenue?—Yes.

27,113. You then got borrowing powers?—Yes.

27,114. And you repaid revenue with 70,000*l.*?—No, we did not. We repaid revenue to the extent of 10,000*l.*, and we wrote off 60,000*l.*, that is, the value of the annihilated works.

27,115. That 70,000*l.*, though, went into your capital account, although you did not consider it of any value?—It only went in to be written off again.

27,116. Surely you replaced the 70,000*l.* which you say you had advanced out of income?—It was not, as a matter of fact, transferred except as to the 10,000*l.* I have looked up the accounts of that period.

27,117. But still the 70,000*l.* that you borrowed was added to your capital account?—Yes, it was included on the one side, but on the other hand there was a deduction of 60,000*l.* for works annihilated prior to 1848, showing a net addition of 10,000*l.*

27,118. But your capital account at present includes that 70,000*l.*?—No, it does not.

(Mr. Pember.) If we could only get the figures of the capital from year to year —

27,119. (Mr. De Bock Porter.) Is there no continuous statement of accounts published by the company that we could see, and so trace it from year to year?—No, you cannot. I have referred to the accounts of the period prior to the year. In 1854 a new system of keeping accounts was inaugurated; previously to that date it is exceedingly difficult to trace capital expenditure.

27,120. Have you no continuous capital account from the commencement of the undertaking?—We have not; the earliest continuous capital account we have commences from this period.

27,121. (Chairman.) From what period?—1854.

27,122. (Mr. De Bock Porter.) Have you not the old books of the company?—The old books, yes; but they do not give a separate capital account. By following the accounts from year to year you will do it, but a separate capital account was not made of each year.

27,123. But surely some skilled accountant could compile a capital account from the commencement, and show us these transactions?—Yes, it could be done; and this 296,000*l.* was compiled in that way.

(Chairman.) Mr. Gomme has been good enough to hand me the evidence before the Select Committee of 1851–52. I see the capital is stated in 1848 at 236,051*l.*

(Mr. Pember.) What page is that on, may I venture to ask?

(Chairman.) Page 809.

(*Mr. Gomme.*) Then there is an addition; you will notice, my Lord, there is a column which gives additional capital; the amounts in that column have to be added.

(*Mr. Pember.*) What is the number of the question, my Lord, because we have got a different page?

(*Mr. Balfour Browne.*) There is a table on page 809 apparently.

(*Chairman.*) I have got your 313,000*l.* now.

(*Witness.*) I quite see where the 313,000*l.* is obtained from; but I say it is wrong, as shown by Mr. Gomme's own figures.

27,124. Now you get back to some other thing: I want to get figures which are not Mr. Gomme's. In these figures before the House of Commons' Committee, your capital is stated in 1848 at 236,051*l.* Besides that there are additions to capital amounting to 77,127*l.*, making a total of 313,178*l.*?—Yes, but that was not capital expenditure. That included part of the capital raised under the Act of 1848. That is to the end of 1848, after the Act had passed, and not before. That is where Mr. Gomme has gone wrong.

27,125. But there is nothing spent in 1848—there is no addition to the capital in 1848?—Not in the capital expenditure, but in the capital raised. I confess that table is not so clear as it might be. It is all mixed up with capital and capital expenditure.

27,126. Where is the evidence relating to that?—I cannot find any. I have looked, and I cannot. I do not know whether Mr. Gomme has been more successful.

(*Chairman.*) It is signed, I see, by Mr. Phipps, secretary and Charles Lee.

(*Mr. Balfour Browne.*) Mr. Gomme says the evidence is given over a series of questions; he can give them.

(*Witness.*) Not on that table, is there?

(*Mr. Balfour Browne.*) So he says.

(*Mr. Pember.*) I do not see the 313,000*l.* now.

(*Mr. Balfour Browne.*) Because you have to add two figures together.

27,127. I see this same return says, that there was a sum in 1834 of upwards of 60,000*l.*, since, by some process, increased to 77,000*l.*, which might have been divided as dividends, but was laid out in new works, and upon which sum of 77,000*l.* and upwards no dividend is or has been paid. That I suppose is what you are alluding to when you say 70,000*l.* was spent out of revenue?—Yes.

27,128. (*Mr. De Bock Porter.*) But still that revenue having been replaced that is in capital now?—No, it is not; it was written off both sides of the account.

27,129. Still, you say you raised it out of capital, and you repaid revenue—you say you took that 70,000*l.* first out of the new capital that you raised. If you took it out it must be in your capital account still?—No, it was never transferred to revenue. It was raised in this way—it was added on the left hand side of the capital account, and then it was subsequently deducted. The 60,000*l.* was on both sides. So that the amount carried forward was the 70,000*l.*, less the 60,000*l.*, or a net increase of 10,000*l.*

27,130. What did you do with the 70,000*l.* that you took out of the additional capital that you raised?—Spent it in other works; it was free capital. When the 60,000*l.* was written off it simply increased the balance at credit of capital by 60,000*l.*

27,131. (*Mr. Lewis.*) Let me put it to you in this way: you spent this 70,000*l.* on your works out of revenue?—Yes.

27,132. You went to Parliament for borrowing powers?—For raising new capital.

27,133. In the amount raised you included this 70,000*l.*?—No, we did not.

27,134. Then how did you get the 70,000*l.*?—I do not quite follow?

27,135. It must have been included in the capital raised?—It was included in the estimate laid before Parliament.

27,136. True, and therefore, it must have been included in the amount you were authorised to borrow?—Yes.

27,137. You did borrow it?—Yes.

27,138. And then if you applied it, if you did not carry the whole of it to revenue, your loan capital must have been reduced to the extent of that 70,000*l.*?—No, not at all.

27,139. Otherwise your loan capital would still contain that 70,000*l.*?—No, not at all. I am sorry I cannot make myself clear.

27,140. (*Mr. De Bock Porter.*) I think you must give us an account to show us how it really does operate?—It simply amounts to this, that supposing you have got your capital of 270,000*l.* on the one side—that is, your receipts side—on your payments out of capital, you have got 340,000*l.*; then by deduction—I will not say it is good bookkeeping—but by deduction, less estimated value of annihilated works up to 1848, 60,000*l.*; that gives balance carried forward 280,000*l.*, the total carried forward on the left-hand side is 270,000*l.*, and on the right-hand side of the account 280,000*l.* That is how it appears in the accounts.

27,141. Then it is not correct to say, that out of the additional capital you raised you paid yourselves the 70,000*l.*?—No, it is not.

27,142. That is the whole point, is it not. You said the first thing you did was to repay that 70,000*l.*?—The first thing we did?

27,143. When you raised the additional capital?—No; what I said was, the first thing that a statutory company ought to do is to adjust its capital account, and we should have paid ours. I am afraid I misled you if you thought that.

27,144. I thought you said the first thing was you repaid the 70,000*l.*, and I presumed that still remained on the capital account?—That was not so, as could show you distinctly by a copy of the accounts. I can assure you that is the way it appears in the books.

(*Mr. Balfour Browne.*) I think they did so—they took the 70,000*l.* for what had been overspent, and then afterwards, in 1854, they wrote off for obsolete works 60,000*l.*

(*Witness.*) Indeed we did not.

(*Mr. Balfour Browne.*) So there is 10,000*l.* still in the capital account.

(*Mr. Pember.*) May I have a try?

27,145. (*Chairman.*) I should like to understand it, if I could. In 1848 you had spent out of revenue 70,000*l.* on capital account?—Yes.

27,146. Parliament gave you the power to create new shares to the amount of 200,000*l.*?—Yes.

27,147. Did you issue new shares to the amount of 200,000*l.*?—Yes.

27,148. And received, therefore, 200,000*l.* on capital account?—Yes.

27,149. Did you enter to capital account only 130,000*l.*, that is the 200,000*l.* minus the 70,000*l.* which capital owed to revenue?—No, we entered the full 200,000*l.*

(*Mr. De Bock Porter.*) I cannot understand it, it is beyond me.

(*Mr. Pember.*) May I have a try; I do not think I can do it, but I should like to have a try.

(*Chairman.*) Wait a moment.

(*Witness.*) The 200,000*l.* was not allocated to any particular purpose. It was for the general purposes of the undertaking. We carried forward the 296,000*l.*, plus the further capital expenditure on one side of the account, and the old capital plus the 200,000*l.* we raised, on the other side.

27,150. What do you mean by the 296,000*l.*—the 226,000*l.* plus the 70,000*l.*?—Yes.

27,151. (*Mr. Lewis.*) Is this the explanation—that you did not raise debenture stock, but ordinary shares—capital in ordinary stock?—We had power to raise 200,000*l.*

27,152. In this particular case, did you raise it by ordinary stock?—Yes, by ordinary share capital.

27,153. Then did your shareholders reduce the ordinary stock to the extent of this amount?—No. It simply means that we had 60,000*l.* more to spend for capital purposes than we should have had if we had acted upon our strict rights and divided it among the shareholders. That is all it amounts to.

(*Chairman.*) I give it up.

Mr. H. Wilkins.

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Mr. H. Wilkins. (Mr. Pember.) I am very near giving it up, but I should like to have one shot if I might, my Lord.

21 Feb. '99 (Chairman.) Very good.

27,154. (Mr. Pember.) All your capital powers were abolished in 1848, were they not, and you started afresh as a new company?—The capital powers were abolished?

27,155. Yes?—No, I do not quite follow that.

27,156. Yes, and re-created?—Under the 12th section the capital in the dissolved company was to form part of the capital in the new company. Then, by the 13th section, we were to raise 200,000*l.* by the creation of new shares.

27,157. That carries me one step further back; what were the capital powers, then, of the old company?—The capital powers were 226,000*l.*

27,158. In shares?—143,800*l.* in shares besides borrowing powers, which we had exercised to the amount of 69,800*l.*, and unexercised to the amount of 12,320*l.*

27,159. Let us just add that?—That makes a total of 226,000*l.*

27,160. That makes your borrowing powers, under your Act, 82,200*l.*?—That is so.

27,161. Add that to the 143,800*l.*?—No; the 226,000*l.* includes the 143,800*l.* of share capital.

27,162. And the 82,200*l.* of the other?—That is so; that makes the 226,000*l.* Now, if you will allow me to refer you to section 20:—"It shall be lawful for the company, from time to time, to borrow on mortgage or bond, in addition to the said sum of 12,320*l.* herein-before authorised to be borrowed, any sums of money not exceeding in the whole the sum of 66,666*l.*—that is the ordinary proportion of loan capital. But Parliament, in addition to the ordinary proportion of loan capital, distinctly continued the unexhausted borrowing power of 12,320*l.*; and I say that if Parliament had intended the capital expenditure to have been written down, they would certainly never have brought forward that unexhausted borrowing power. I think it is plain, on the face of it. That, I think, will show it clearly. They would have extinguished that right instead of continuing it. I think I had better put in a copy of the accounts showing the deduction. I am sorry to say I have not prepared such a table.

27,163. (Chairman.) It is a matter of some moment to the Lambeth Company; you are distinctly charged by the County Council with inserting in your capital account 87,000*l.* as bearing dividend more than you are entitled to do?—I say there is no truth in the allegation.

27,164. That is the point we are trying to clear up if we can?—Even if it were so, Mr. Gomme has not taken into account the 60,000*l.* that was written off.

27,165. (Mr. Balfour Browne.) We had no knowledge of it?—I quite agree to that.

27,166. (Mr. Pember.) You agree to that?—That they had no knowledge that the 60,000*l.* had been written off.

27,167. (Chairman.) How can you write off shares if you have issued shares?—We had got the money.

(Mr. De Bock Porter.) Without seeing the book-keeping entries it is impossible to understand it.

(Witness.) We did not write off the shares. It simply gave us 60,000*l.* more money to spend.

(Mr. Pember.) The only question is how much they debited to capital, and with what expenditure they debited capital—that is it.

(Mr. De Bock Porter.) It is impossible to understand it without the bookkeeping entries. We must see the account.

(Mr. Pember.) I am inclined to agree with you.

(Witness.) I have not the slightest objection to produce that. I will let you have a copy of the account.

(Mr. Pember.) We must not confuse writing off capital with writing off capital expenditure; those are two different things.

(Witness.) If you have got 300,000*l.* of capital, and if you have got 320,000*l.* on the other side of capital expended, you must do one of two things—you must

either raise more capital to balance the account, or you must write off the odd 20,000*l.* We did both. We raised 70,000*l.* capital and wrote off 60,000*l.*

(Mr. Pember.) That accounts for 70,000*l.* out of the 80,000*l.* odd.

(Mr. Balfour Browne.) 60,000*l.* out of the 70,000*l.*

(Witness.) 70,346*l.* is what I may call it. The other was during 1848, after the passing of the Act.

27,168. (Chairman.) Very well, let us see those accounts?—You shall have a copy of the balance-sheet.

27,169. Go on, please, with your corrections?—With regard to the summary table put in at Question 3731, I say that, so far as my company is concerned, it is inaccurate. No sum has been disallowed by Parliament. The amount written off in 1854 for works which have become annihilated fully covers all obsolete works, and there is no justification for writing off capital simply because it is over 60 years old.

27,170. This amount of 87,178*l.* is alleged to be not for obsolete works, but in excess of the amount that Parliament allowed you?—I say that no amount has been disallowed by Parliament. That is the point at issue which we have been trying to solve.

27,171. Then it is the same point over again?—Yes; but here there is a further thing. You see what Mr. Gomme wants to do; this table goes further than that; it takes in, in the sixth column, the figures of obsolete works. I say that the 60,000*l.* which was written off in 1854 fully covers obsolete works, even if there were any obligation on the Company to write off obsolete works.

27,172. You are making your 60,000*l.* now serve a double purpose; first to meet the alleged excess of capital, and next to meet the obsolete works?—Certainly.

(Chairman.) It cannot do both.

(Mr. Pember.) What he says is: "I have spent the money out of revenue, and might have put it to capital and recouped revenue, but I did not recoup revenue, because I considered that 60,000*l.* worth of it had been annihilated."

(Witness.) It was our poverty, Mr. Pember. We could not raise the money, and therefore we wrote it off the capital account.

(Mr. Pember.) Never mind your motive.

(Witness.) I think that was the explanation.

(Mr. Pember.) I think that was it.

(Witness.) Of course there is no justification for writing off capital in the next column simply because it is over 60 years old. Our engines and our mains are maintained or replaced out of revenue; and the land at Brixton and Streatham which we purchased in 1832 and 1834, I should think is at least ten times the value that it was then.

27,173. (Major-General Scott.) It always appears to me there is this difficulty in the matter if you do not write off depreciation; assuming you have an engine which stands in your books at 15,000*l.*, and that engine has been in use 40 or 50 years, and you have repaired it, still it has gone on gradually deteriorating, and besides, it may be an old pattern, but it remains in your books at 15,000*l.*; at a certain date you decide that you will discard that engine and get rid of it, and it is sold for old iron. Up to that date at which you made up your mind to do that, that engine was not worth 15,000*l.*?—Your argument would be correct if we simply credited the capital account with the old iron price, but that is not what we do.

27,174. I mean that stands in your books at the end of one week as worth 15,000*l.*, and the following week you make up your mind that the engine is worth nothing but its price as old iron, and you get rid of it?—Will you let me illustrate that point in the contrary direction? In 1895, we had two obsolete engines at Ditton, the E. and F. engines, which possibly you may know. The question then arose how we should increase our engine-power. To put in two new engines would cost, say 10,000*l.*, but converting the old ones, and getting identically the same power that we should with the two new engines, would cost us something between 7,000*l.* and 8,000*l.* We determined then to convert, the question was how that was to be adjusted between capital

and revenue. We took two-thirds from capital and one-third from revenue, so that actually at a capital expenditure of something like, we will say, between 5,000*l.* and 6,000*l.*, we got increased power which, if we had put up a separate installation, would have cost 10,000*l.*

27,175. Because it happened in that particular case—the thing was feasible then, but in many cases it might not be feasible to do it?—I should think in every case. You adapt new types of engine. You see the new types of engine occupy very much less space than the old style, and are very much more efficient in their working.

27,176. Still, it has happened, I suppose, occasionally, that an engine has stood in your books at a considerable sum; you have made up your mind to get rid of it, and then immediately its real value is realised, which may be a mere fraction of what it stood at in your books a short time before; that seems to me to be an anomaly?—(Of course, my knowledge does not extend sufficiently over the accounts of the company to answer that definitely, but I can say, that nothing of the sort has occurred during my experience, certainly.)

27,177. (*Sir John Dorington.*) Supposing you have an engine of 500 horse-power, which gets worn out, and you replace it by another engine of 500 horse-power—the same power—that would be charged to revenue?—Yes.

27,178. (*Mr. De Bock Porter.*) The whole cost of the engine?—Yes; but if we get increased power then, we charge the whole or nearly the whole of the increased power to capital. I thought General Scott's question was rather a different one where the engine is worn quite out, and is not replaced.

27,179. (*Major-General Scott.*) Yes, there it stands in the books until the decision is taken to get rid of the engine at a certain date, up to that date it stands in the books at its original value, whereas, in reality, it may be only worth a tithe of that value?—That would not apply for this reason, that the auditor would require us to show what has become of that engine, and how it is replaced. We have arranged with him a regular plan by which we should charge to revenue at least the amount of horse-power which we lose.

27,180. If you do that, it would not matter?—So I do not think your case would quite come in. I cannot conceive an engine disappearing altogether.

27,181. (*Mr. Pember.*) It is sure to be replaced by another one?—I should think it must be. I cannot conceive of anything to the contrary, except, of course, the old pumping station at Belvedere Road, which is part of the annihilated works included in the 60,000*l.*

27,182. (*Chairman.*) Let me just read to you something which Mr. Gomme said, which I think will point clearly how the difficulty arose. He says this, "In 1848 the expenditure was returned at 313,000*l.* and the capital by the Act of that year was declared at 226,000*l.* In 1856, which is the next information we have about the capital expenditure of this company, the capital expenditure was returned at 608,985*l.*, and the capital declared by the Act of that year was 544,660*l.*—still below the authorised amount. In 1867, the expenditure reached 866,000*l.*, and the capital declared by the Act of 1869 was 837,000*l.*, gradually creeping up to the capital expenditure. In 1871, the audited expenditure was 933,000*l.*, and the capital was 935,000*l.* Now, in all those cases of bringing forward of capital, my suggestion is that instead of the 226,000*l.* being included in the expenditure, the 313,000*l.* has been included in the expenditure." That is the charge against you, whatever it means?—As I have said, the 313,000*l.* is wrong; that should be 296,000*l.*, and the difference was, as I say, 60,000*l.*, which was written off for annihilated works.

(*Chairman.*) The difference was 70,000*l.*

(*Sir John Dorington.*) They took 10,000*l.* for dividend.

(*Mr. Pember.*) 10,000*l.* is brought into the capital account, as I understand it.

(*Witness.*) Yes, that is the practical effect of it. The 10,000*l.* is brought into the capital account, and the 60,000*l.* is written off the capital expenditure.

(*Mr. Balfour Browne.*) In 1848 and 1854, according to this witness, 70,000*l.* had been brought in; in 1854 they wrote off 60,000*l.*, and then it was reduced to

10,000*l.*, which still stands in the capital account. That is the statement of Mr. Wilkins.

(*Mr. Pember.*) Yes.

27,183. (*Chairman.*) Then there is still in the capital account 10,000*l.* more than Parliament declared as the capital in these various years?—I cannot help thinking there is some confusion of thought here.

27,184. I daresay?—What Parliament declared was the capital when the company were in Parliament in 1848 had nothing whatever to do with what the capital expenditure was up to that period.

27,185. No, perhaps not?—Supposing it had been the other way about; supposing the declared capital was 226,000*l.*, and we had only spent 200,000*l.*, would Mr. Gomme have allowed the shareholders to put the 26,000*l.* into their pockets, simply because the capital of the company was declared at 226,000*l.*? If it is fair in one way, it is fair in the other. The capital and the capital expenditure really have nothing whatever to do with each other in that aspect.

(*Mr. Balfour Browne.*) Of course, my Lord, we say they had no right to take the 70,000*l.* out of revenue and apply it to the uses of the old works. We say the Act of Parliament itself clearly enacted that the amount of 200,000*l.* was to be borrowed for new works.

(*Witness.*) Our contention, of course, is that the Act of Parliament is extremely clear in the opposite direction.

(*Mr. Balfour Browne.*) I will argue it in good time.

(*Chairman.*) Very well, I can do no more.

(*Mr. Pember.*) I do not know whether you have seen the Act of 1869, where there is a very elaborate setting forth of what the capital powers of the Company had been and what their expenditure had been.

(*Mr. De Bock Porter.*) Had we not better wait for the account?

(*Mr. Balfour Browne.*) Yes.

(*Mr. Pember.*) I do not care what is done because it does seem to me that it has got no bearing on your inquiry—but I have said that so often. If statutes go for anything in the way of closing accounts, surely the Act of 1869 ought to go for a good deal.

(*Mr. Balfour Browne.*) It does not seem to have gone for much in 1848.

(*Mr. Pember.*) Because there is no declaration in 1848.

27,186. (*Chairman.*) Let us see the Act of 1869?—I have got all the Acts of Parliament here relating to the company. I have gone very carefully through them, and you will find that in almost every instance the company did not go to Parliament until they had overpaid their capital account—even as late as 1896; we were then deficient something like 10,000*l.*, or 15,000*l.*

27,187. (*Mr. Lewis.*) I see to the end of 1897 your capital expenditure was 16,000*l.* less than the total of the moneys raised by you and the premium on the stock issued?—Yes.

27,188. That is, you had spent the whole with the exception of about 16,000*l.* at the close of 1897?—Yes. If you will carry that forward a little bit further, in December last year, our capital account was overpaid to the extent of 45,000*l.*; since December of last year we have raised 100,000*l.* debenture stock, so that our capital account now is in credit. Carry that back to 1848, and there you have the exact position of affairs.

27,189. (*Chairman.*) Doubtless it is, but I cannot make anything of it. Go on with your corrections please?—Next I come to Mr. Dickinson's evidence at Question 4758. Mr. Dickinson says "We never proposed before Parliament to do anything but to buy all the companies." Now when the Purchase Bill was before the House of Commons in 1895, the second reading was passed by a small majority. There were eight separate Bills. Mr. Whitmore moved this instruction: "That it be an instruction to the Committee (on the Lambeth Water Transfer Bill) to insert a clause providing that the said Bill shall not become law until the whole of the Bills dealing with the purchase of the London Water Companies by the London County Council have received the Royal assent." That instruction was opposed by Members speaking in the name of the London County Council, and saying that they did so by

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direction of the London County Council. I was not only present myself, but I have refreshed my memory by referring to the reports.

27,190. We have had this in evidence?—On the same day the following motion was put and lost on a division by 143 to 157:—"That it be an instruction to the Committee to provide that the arbitration shall be an open arbitration, and that the arbitrator shall consider impartially all points that are favourable to either side." The open arbitration was also opposed by the London County Council and defeated. So that Mr. Dickinson has forgotten, in his evidence, those two little points.

27,191. Go on please?—Again, Mr. Dickinson says in Question 4763, "I think we have always thought that if we had an ordinary arbitration under the Lands Clauses Act with compulsory purchase and everything else, we should have to give them a present of six or seven millions, and we wanted to avoid that; we did not think that was right." My way of putting it would be this, that if they bought under the ordinary law of the land, they would give a fair value, but under their special arbitration clause, they would be robbing the companies of six or seven millions.

(Mr. Balfour Browne.) This is scarcely correction, my Lord, it is argument.

(Witness.) It is comment.

27,192. (Chairman.) Have you any more corrections?—There is a correction of Mr. Dickinson's evidence at Question 5575 I do not think I am exceeding my rights in calling attention to these points.

(Mr. Balfour Browne.) It seems to me that they are very argumentative.

(Mr. Pember.) So was Mr. Dickinson.

(Witness.) They are purely facts. At Questions 5575 to 5577, Mr. Dickinson speaks about its being a common thing to cut the water off.

27,193. (Chairman.) He says houses in Balham had their water cut off?—In 5577 he says it is a thing that is constantly occurring. Now, the facts of the case are these: There was a short supply of water in part of the Company's district for a few days at the end of June 1897, owing to the sudden blocking of some of the filter beds with fish spawn. No house, so far as we could ascertain, either at Balham or elsewhere, was without water for a whole day, and where there was adequate cistern accommodation, little, if any, inconvenience was felt. The pressure was reduced owing to the large quantity of water then being drawn off at the street level for road washing. The blocking commenced on the Saturday afternoon, and full supply was resumed by the following Thursday. The average daily supply for these few days exceeded the average for the whole year. The greatest deficiency during this period amounted only to the difference between a spring day's supply and a summer day's supply, and that was on Sunday when the demand is the least. So far from this deficiency occurring annually, such a thing has never happened before so far as, after a careful inquiry, I have been able to ascertain.

27,194. Anything else?—There is a small correction of Mr. Goidney's evidence with regard to the table he handed in at Question 7434. There the capital of the company is described as stock; it should be shares.

27,195. If you do not think it material, pray do not take up time with it?—Then at Question 12,130 in Mr. Martin's evidence—

27,196. These are the new supplies to Croydon?—No. It is Question 12,130, where the question of constant supply is dealt with. The question there was, that the complaint made against the Lambeth Company was that the Lambeth Company did not give a constant supply and the Croydon Company did. I think Mr. Martin ought to have said that at that time, when he was giving evidence, the Croydon Corporation were at the end of their tether.

27,197. You say at the time Mr. Martin gave his evidence the corporation had done—what?—They were at the end of their tether. He gave evidence on the Monday; on the Friday they discontinued road-watering entirely. On the 18th July they issued a notice that "In consequence of the unprecedented dryness of the past autumn, winter, and spring, and the present lowness of the springs, the council find it necessary to curtail the night supply of water, and

"have to give notice that the supply will be cut off," and so on.

27,198. So that you say they did not treat their customers any better than you did?—Quite so.

27,199. (Mr. Balfour Browne.) At that time they were before the Local Government Board asking for a loan of 32,000*l.* to sink a new well at Waddon?—Which has been disallowed, so they are in no better position now.

27,200. (Chairman.) Go on please?—At Questions 12,202 to 12,215 the complaint of the Croydon Rural District Council is not quite correctly stated by the witness. I need not trouble your Lordship with the letters which passed, but the complaint that they made was that that portion of the rural district served by the company's mains was not supplied with an adequate supply of stand-cocks. Of course, if the mains had been frozen to any extent, standpipes would have been useless, and, therefore, the letter from the Croydon District Council refutes on the face of it the evidence given by their witness. The Company replied that all practicable steps were taken to afford householders, whose pipes were frozen, means of obtaining a supply of water. Where standpipes could not be fixed in sufficient numbers arrangements were made for delivering water by means of water-carts. The total length of mains in the Croydon Rural District is 39½ miles; of these nearly two miles became frozen. The freezing of the mains unquestionably commenced with the consumer's pipes. The question of depth is not an important factor, as I explained yesterday. Since 1895, 6,450 yards of mains in the Croydon Rural District have been lowered.

27,201. What is the use of lowering them if depth is not an important factor?—Simply to satisfy the public.

27,202. (Major-General Scott.) We had all this yesterday, had we not?—Except to show the difficulties. Twenty-seven advertisements were issued by the Company for jointers, but we were told that the provincial companies and corporations were also in the market for skilled labour, and we positively could not obtain anyone. During the frost of 1895, 2,206 standpipes were fixed; 93 water-carts were engaged in delivering water daily, between 400 and 500 extra men were taken on, and the cost of the frost to the Company exceeded 30,000*l.* The shareholders had to submit to considerable reduction of their dividends in consequence. As regards another question, the payment of water-rates, during this period every consumer was supplied with water every day, and, where the direct supply failed, at much greater cost to the Company than at ordinary times. I have a photograph here which may be interesting to you as showing some of the physical difficulties under which we laboured. That is a photograph of one of our filter-beds at Ditton ten days after the severe frost had passed by.

(Handing in photograph.)

27,203. (Sir John Dorington.) Is that ice shown there?—Yes.

27,204. (Chairman.) Which had been taken out of the filter-bed?—Yes. It was not merely a question of the cost, but a question of the difficulty which was extreme at that period. I fervently hope I shall never have to undergo another such experience.

27,205. Any more corrections?—I should like to correct Dr. Randell's evidence at Questions 12,600 to 12,609. The complaint there was that the Company did not notify the anticipated short supply. The undertaking by the Company was to notify accidents, but in fact, no accident affecting Beckenham has occurred since 1893, when the undertaking was given, and in 1897 we did not know that the failure would occur in Beckenham. We had every reason to believe that Beckenham was well supplied until letters were received pointing to a deficiency. Dr. Randell, I should say, speaks about there being not a drop of water anywhere. That is a gross exaggeration. The short supply lasted from Sunday to Thursday morning, and in no day was much less than 20 million gallons delivered, the daily average for the year being 23½ million gallons, and that supply increased at the rate of two millions a day, the quantity delivered on the last day of the short supply exceeding the average of the year by nearly four million gallons. I can put in letters—unsolicited letters—from residents in Beckenham on the subject, but I need not perhaps, trouble the Commission with them.

See
28,683.

27,206. (*Major-General Scott.*) Was this in 1893?—No.

27,207. (*Chairman.*) This is the fish-spawn business again, is it not?—Yes, the fish spawn in 1897.

27,208. That was the cause of the stoppage?—That is so. Then last autumn we served notices in Beckenham expressing our willingness to provide a constant supply if the consumers would put in proper fittings. I have a number of letters here saying that the writers were perfectly satisfied with the supply given by the company, and did not wish for the alteration. There is one gentleman who adds that: "In consequence of the agitation some time ago of the Beckenham Urban Council, I thought it best to sell my small holding in your company, and now regret having done so." That may be taken as a type of the letters.

27,209. Have you any more corrections?—No.

27,210. Then we will now come back to the question of purchase?—I may say that I am about to represent not my own personal views. This evidence has been considered by the Board of Directors, and approved by them.

27,211. Will you give us your views upon the question of purchase and the financial expediency of purchase?—Although the purchase price has, no doubt, some bearing on the question, the financial result of purchase does not appear to depend so much upon the sum paid for the undertakings as upon the policy subsequently adopted by the purchaser. The saving estimated by Mr. Haward at 50,000*l.* a year, might, for instance, be easily converted into a loss by imprudent or inefficient management.

27,212. You say that the expediency of purchase does not depend so much upon the sum paid as upon the management; but surely the sum paid has a good deal to do with it?—It has something to do with it; but the point is this, that, in the mere matter of interest on the purchase money, the difference there is not so great as the difference in the cost of management; the cost of management may make a very great difference, far exceeding any additional interest on the purchase money.

27,213. Go on in your own way?—Then, by arbitration under the Lands Clauses Consolidation Act, the purchaser would pay to the vendor compensation representing the value, and no more than the value, to the vendor of the undertaking as a going concern. The compensation, it may be assumed, would be based upon the actual earnings of the vendor and the probability of such earnings being maintained, increased, or diminished, as the case may be, together with any sum which the arbitrator might consider necessary to maintain the shareholders (who simply in the assumed interests of the purchaser would part with property they would prefer to retain) in as nearly as possible the same position as they would hold financially if no purchase took place. In this connexion the directors desire me to express their conviction that a large number of the company's shares are held by trustees under wills or settlements, who have power to retain existing investments, but in case of realisation are limited to trustees' securities yielding a lower rate of interest. If, owing to the purchase of the water companies' undertakings for cash, as proposed by the London County Council, a large amount of trust money (possibly amounting to several millions in the aggregate) had to be invested at the same time, the market price of securities to which trustees are limited would necessarily rise. It is clear, therefore, that, unless these considerations were taken into account by an arbitrator, the beneficiaries under these settlements would be twofold sufferers, firstly by a reduced rate of interest, owing to the change of investment, and secondly by a reduction in the amount of capital in consequence of the artificial or temporary appreciation in the price of the securities which their trustees would be compelled to buy. This would be a manifest injustice, seeing that the beneficiaries and their trustees would prefer to retain their existing investment. No question of sentiment enters into the case as regards compensation for compulsory sale; it is a mere matter of simple justice that a man should not suffer by the compulsory expropriation of his property. The costs of such arbitration would also be payable by the purchaser. The earnings of the vendor would become the property of the purchaser, who would derive all the benefit obtainable from any superior credit and skill he might possess, and would suffer by imprudent management. As

regards the financial result following purchase it is clear, that if the owner, whether the company or a purchaser, were to adopt an extravagant system of management, he must submit to diminished profits. So also if he were to embark on a large capital expenditure a long time in advance of prospective requirements, or considerably in excess of the needs of the district or for purposes not required or which might be served at a smaller outlay. But assuming that the prudent method of management hitherto pursued is continued, there seems to be no reason to doubt that, whether the undertaking remains in the hands of the company or is transferred to a public authority, a remunerative rate of interest will continue to be earned on the capital sum representing its arbitration value. The company entertain the strongest objection to any departure from settled law and practice in arriving at the price to be paid for their property, in the event of purchase being ultimately decided upon in the assumed interests of the public without default on the part of the company. The result of an arbitration under the existing law and practice can be forecast within reasonable limits, but to embark upon an arbitration on special conditions would be either to enter into litigation with tied hands and closed mouth, or to embark upon a speculative transaction. The Legislature ought not to be asked to countenance a purchase open to the grave objection of injustice or uncertainty; either alternative is opposed to public policy. It is clear that in putting forward special clauses for arbitration, the London County Council are actuated by a desire to drive a good bargain and obtain possession of the property of the company for a sum below its full value. Then I can give a resolution passed by the London County Council in 1894; perhaps your Lordship will regard that as ancient history, but if you think it material—

27,214. I think we have got that already on our notes?—No, I think not.

27,215. Have we not?—Not the resolution of 1894.

27,216. Was this a communication made to you?—Yes, this was a copy of a resolution which was sent to the company.

27,217. Read it?—It is: "That negotiations be entered into for the purchase of the undertakings of the water companies, or one or more of them"—there is a departure you see from Mr. Dickinson's statement—"at a fair and reasonable price, on the basis of a desire to purchase and willingness to sell, having regard to any circumstances and statutory provisions affecting the present and prospective position, income, expenditure, liabilities, obligations, and value of the companies respectively and their undertakings, including any present and probable future demands for improvements and extensions of works and new or additional sources of supply, and on the understanding that if satisfactory terms cannot be mutually agreed upon, an application will be made to Parliament to determine in what manner and on what conditions a transfer to the Council shall be arranged. Provided that no monopoly right on the part of the water companies be recognised." Of course, that was an impossible basis of negotiation.

27,218. Which part of that is impossible?—The whole of it. First of all you cannot assume a willingness to sell.

27,219. I understand you object to that?—Then we object to the arbitrator "having regard to any circumstances and statutory provisions affecting the present and prospective position, income, expenditure, liabilities, obligations, and value of the companies." One does not know what that means.

27,220. I think the County Council have explained what it means; they say the arbitrator should have regard to the possibility of Parliament either cutting down your water charges or introducing a competitive supply or making some provision of that sort?—They had not explained that at this time.

27,221. (*Mr. Pomeroy.*) I think they have?—They have now, but had not then. Then my directors wish to add that while they were not and are not willing to sell they would not offer any factious opposition should a policy of purchase be decided upon in the public interest. Mr. Dickinson admits that the object of the London County Council is to diminish the compensation payable to the vendor.

27,222. Of course it is?—You have got that in evidence. It may further be pointed out that all the

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modified arbitration clauses put forward by the London County Council in substitution of the original clause in the Transfer Bill of 1895 were more or less of a speculative character. The arbitrator was to have regard to various matters, and it would be impossible to forecast what view he would take either of his powers, which would undoubtedly be exceedingly large, or of the considerations submitted to him. There is an enormous variation possible between the largest sum he might award on the assumption that he favourably entertained all the contentions of the company, and disregarded those of the County Council, and the smallest sum he would award supposing he took exactly the opposite view. The company object to going into a speculative arbitration. The statutory precedent for special arbitration terms contained in the Housing of the Working Classes Act, 1890, sections 21 and 41, has reference to property allowed by the owner to become dilapidated and insanitary and limits his claim to compensation by what is assumed to be the measure of his neglect.

27,223. (*Mr. Balfour Browne.*) There is a similar clause; they have power to take lands for allotments?—Yes, I will deal with that afterwards.

(*Chairman.*) Then there is a double inquiry—first by the County Council, and then by the Local Government Board, and it is only if there is an impossibility of getting land at a reasonable price.

(*Mr. Balfour Browne.*) Even then you are not to get the 10 per cent.

(*Chairman.*) Yes, that is so after all that.

(*Witness.*) But then you are not buying a commercial concern.

27,224. (*Mr. Balfour Browne.*) You are buying commercial land?—No, you are not allowed to make a profit out of it.

27,225. (*Chairman.*) To my mind if that analogy is to be adopted the County Council would first have to satisfy Parliament that they had made a reasonable offer to the companies, and that the reasonable offer had been refused?—If a special arbitration clause were framed in the case of the London water companies, it is not improbable that, bearing in mind these sections of the Housing of the Working Classes Act, 1890, an arbitrator would, perhaps unconsciously, regard the clause as penal in its nature and shape his award accordingly. The London County Council, however, do not allege that the London water companies have failed to fulfil their statutory obligations. The special provisions for the purchase of land otherwise than by agreement, for allotments for the labouring population are also not applicable to the purchase of undertakings capable of yielding profit. The objections of the company to any special arbitration clause may be summed up as follows:—(1.) The Lands Clauses Consolidation Act has been in force for half a century, and has proved satisfactory in working under the most diverse circumstances, and its operation and procedure are well understood. (2.) The object and probable effect of the special arbitration clauses put forward by the London County Council are to diminish the amount of compensation which the company might reasonably expect under an arbitration conducted under the ordinary law of the land. (3.) A special arbitration would be speculative, and while it might inflate the compensation would be more likely to diminish it. Either result would be unjust and unsatisfactory. (4.) Having regard to the statutory precedent of a special arbitration clause above referred to, an arbitrator would probably construe such a clause adversely to the company. (5.) It may be added that even if the company were to be deprived of part of the compensation to which they would be entitled under the existing law, it by no means follows that purchase would be financially advantageous to the purchaser, because if the administration were conducted on political and not on business lines the cost of management would considerably exceed the present cost, and the profit would be proportionately reduced.

27,226. What do you mean by conducting an administration on political lines?—To give you a concrete illustration—I do not say it with any offensiveness to the County Council—it is a matter of common knowledge that the County Council have been captured by the labour party, and a good deal of their administrative work is done on what I may call political lines. That objection, I think, would not apply to a specially

constituted board, a board having nothing to do but this one thing.

27,227. Would that objection apply to any ordinary corporation?—It has not hitherto; it might.

27,228. Why is it to apply to the London County Council more than to other corporations?—Because the London County Council have fallen, have succumbed, to the temptation; other corporations have not.

27,229. I see; it is a frail member of the sisterhood?—Yes, I say that with no offensiveness to the County Council, simply by way of illustration.

27,230. You state a painful fact?—It is a painful fact, a very painful fact indeed.

27,231. (*Mr. Pember.*) Rather in sorrow than in anger?—I say it very much in sorrow.

27,232. You have spoken about trustees investing both in your shares and in your debentures I think?—Yes.

27,233. Can you tell me what proportion of your shares is held by trustees?—No, I cannot, because the company do not recognise trusts; they are not required to under the Companies Act.

27,234. Is it a question only of a few hundred pounds?—It is a very large amount, I may say.

27,235. (*Sir John Dorington.*) Do you only register one name?—We register three names, but whether they are joint owners or whether they are trustees, of course, we have no means of knowing.

27,236. (*Chairman.*) How are you to tell; you say they are large amounts?—Taking the joint accounts they are large amounts.

27,237. (*Sir John Dorington.*) You have a large number of joint accounts?—A very large number, not only in number but in amount still more. The average holding of a joint account is very much larger than the average holding of a sole account.

27,238. (*Chairman.*) Do you mean that more than half of your shares are held on a joint account?—I should scarcely say more than half, nearly half.

27,239. (*Sir John Dorington.*) Approximately half your capital is held on joint accounts?—Yes, I should think so.

After a short adjournment.

27,240. (*Mr. De Bock Porter.*) You prefer, do you not, arbitration to any negotiations based upon income at the present time?—I should think that the most practical way, speaking as a practical man, would be this; to follow, as I said yesterday, the Birmingham precedent. Supposing purchase should be decided upon, if you insert in your Bill a clause providing for arbitration under the Lands Clauses Act, negotiations would almost certainly ensue, because, as I have said, the procedure under the Lands Clauses Act is perfectly well understood, and the difference between the two parties would be reduced to a minimum. But if you put in a speculative arbitration clause such as the County Council propose this session, giving the arbitrator the power of an Act of Parliament, rolling the three estates of the realm into him, so to speak, I think that would absolutely shut out negotiation; I mean to say, we should have no common starting point, whereas under the Lands Clauses Act we should.

27,241. (*Chairman.*) Supposing Parliament were disposed to sanction any clause remotely resembling the clauses that the County Council had proposed, I think the water companies would be well advised to negotiate at once?—I am not sure about that.

27,242. If you go to arbitration under one of those clauses Heaven help you?—I do not anticipate that Parliament will for a moment sanction such a clause, I must say.

(*Mr. Claude Baggallay.*) It is not the fear of litigation; it is what the clause means.

(*Chairman.*) I think I can see what the clauses mean.

(*Witness.*) We do not know what they are intended to mean.

(*Mr. Claude Baggallay.*) We know what they are aiming at.

(*Mr. Pember.*) I do not know whether Mr. Wilkins heard Mr. Moulton's evidence in 1894.

(*Chairman.*) I think the London County Council have shown the wisdom of the serpent. They are perfectly well advised in what they have proposed, only it will not turn out well for you.

(*Witness.*) Not if they are successful.

(*Chairman.*) They were very near hitting it off before Lord Rathmore.

(*Mr. Pember.*) They very nearly got round Lord Rathmore I am bound to admit.

(*Witness.*) There is our old expression, my Lord: Thank God there is a House of Lords.

(*Mr. Balfour Browne.*) Lord Rathmore is in the House of Lords.

(*Mr. Pember.*) I am not sure that that House would save us.

27,243. (*Chairman.*) Have you ever made any attempt to come near the London County Council, and to negotiate?—The nearest approach is that in 1893 the company said they were prepared to consider any terms which the County Council would submit. From 1893 to 1899 no terms have been submitted. We are waiting for them.

(*Chairman.*) I suppose it is that both sides do not care to move.

27,244. (*Sir John Dorington.*) Supposing an annuity was secured to you equal to your present income should you advise your company to accept?—No, not quite; I think we are entitled to something for back dividends and for prospective increase.

27,245. (*Chairman.*) The half per cent.?—Something rather more than that; but I think it is quite possible that a well secured—

(*Mr. Pember.*) I do not like to suggest, my Lord, that any question you ask is not a right one.

(*Chairman.*) I will abstain from asking anything of the kind. I quite see that one ought not to prejudice the parties.

(*Mr. Pember.*) I do not think it is a question of what they will take as of what they should be asked.

(*Witness.*) I think I must confine myself to a general answer—that we must expect our full maximum dividend in perpetuity.

(*Mr. Pember.*) I think you had better say nothing at all.

(*Witness.*) And, something further.

(*Mr. Pember.*) If you say something further do not say what.

(*Witness.*) For an unknown quantity.

27,246. (*Mr. De Bock Porter.*) Your receipts for back dividend will be very much trenched upon by the sinking fund clauses?—If we continue in existence the sinking fund will lapse. It was only imposed as a temporary expedient.

27,247. Yes, but there is no date fixed for the lapsing?—No, but it depends very much upon the Commission, of course.

27,248. (*Chairman.*) You do not expect the payments under the sinking fund clause ever to come back to your shareholders?—I do not see why they should not.

(*Mr. Pember.*) I think they ought, if you ask me.

(*Witness.*) As a matter of strict equity they belong to the shareholders.

(*Mr. Pember.*) Just think, my Lord, the sinking fund has been imposed under a set of circumstances and in view of a contingency which has never come up.

(*Mr. Balfour Browne.*) There are no such circumstances mentioned in the clause, Mr. Pember.

(*Mr. Pember.*) Who is to take it? It is my money.

(*Chairman.*) They have certainly not been imposed for the benefit of the shareholders.

(*Mr. Pember.*) It is my money; who is to take it

(*Mr. Balfour Browne.*) It is the consumers' money.

27,249. (*Chairman.*) I do not think I need ask you about amalgamation, I suppose complete amalgamation would be next to impossible?—It would be extremely difficult.

27,250. I think I have nothing more to ask you except with regard to a letter that I have just received. Is it true that you charge schools three guineas a year for merely laying a connexion between your mains and their premises?—I should think not.

27,251. Here is a printed form of contract?—For a fire supply?

27,252. No, not for a fire supply, but for a communication. You do not pledge yourself to give any supply even in the event of fire, but if a school wants to give a concert, for instance, on a week night, and therefore requires the license of the London County Council to do it, they require a fire hydrant to be fixed, and you will not fix the fire hydrant except on the payment of three guineas per annum, and you do not undertake to supply any water even in the case of a fire. Here is your printed form. Just look at that form and say whether that is correct?—It is not for fixing, it is for allowing them the privilege of taking water whenever they require it from the hydrant.

27,253. But you do not pledge yourself to give them any water?—It is subject to the Act of Parliament. We do not pledge ourselves to give a supply of water in frost, drought, or unavoidable circumstances.

27,254. You do not pledge yourself to give a supply of water under any circumstances under that contract. Look at it. They have to pay three guineas a year merely for the connexion; that is a lithographed form?—Yes, it is the form we use. It is a fixed charge for a hydrant fixed on private premises. They use those hydrants for practising and they would use the hydrant in case of fire. There is no charge for water beyond this.

27,255. (*Mr. Pember.*) No further charge?—No further charge. This is according to the size of the hydrant. For a 1-inch hydrant we charge one guinea; for a 2-inch hydrant we charge 2 guineas, and for a 3-inch hydrant 3 guineas.

27,256. Are you bound to supply those hydrants at all?—No, this is merely a matter for agreement. If people like to take the hydrants they are at liberty to do so. We do not press it in any way.

27,257. (*Sir John Dorington.*) I believe it arises out of a requirement of the Council in granting a licence for a public entertainment in a school?—No, I do not think so. All large establishments have these hydrants about the buildings.

27,258. (*Chairman.*) No school could have an entertainment on their premises without the licence of the County Council?—I was not aware that the County Council were such good friends of the companies as to require hydrants.

27,259. It is not a question of the companies. The County Council very properly say, 'We will not authorise crowds to be assembled in your premises unless you have means of extinguishing fire; then when the school people try to get a supply of water to meet the contingency of fire, you demand three guineas for the mere connexion?—No, it is three guineas for the supply of water.

27,260. No, you would have to supply water if a fire took place in some other way?—Not inside the house.

27,261. Therefore it is three guineas for taking the water from the street to the house?—And the supply of water.

27,262. (*Mr. Pember.*) And their using it?—They can use the supply of water in unlimited quantities if they like.

27,263. (*Chairman.*) They are entitled to a supply of water in the event of fire without any hydrant at all?—Not in that way.

27,264. Not inside the house, but from the outside?—Public hydrants there would be, of course.

(*Mr. Pember.*) There are only certain mains in certain streets in which we are bound to put public hydrants.

27,265. (*Chairman.*) Is that the system of your company?—Yes. It is no new thing at all.

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Mr. H. Wilkins. 27,266. (*Mr. Lewis.*) I suppose the connexions have to be made at the expense of the school or of the householder?—Yes.

21 Feb. '99 (*Mr. Pember.*) Beyond the 3l.?

(*Mr. Lewis.*) Beyond the 3l.

(*Witness.*) This is simply an alternative to a supply by meter.

27,267. (*Mr. Pember.*) Would that be in perpetuity?—No.

(*Chairman.*) It is three guineas a year.

27,268. (*Mr. Pember.*) That would be in perpetuity three guineas a year?—I thought you meant the one payment of three guineas.

27,269. No?—It is three guineas a year as long as they keep the hydrant.

27,270. Is there any limit to the use they may make of the hydrant?—Not the slightest. They can practise once a week if they like, and drill their employees.

27,271. (*Chairman.*) And flood their premises?—And flood their premises.

27,272. That is likely, of course, to happen?—If you take the Poor Law Schools, they have a drill once a quarter; sometimes, once a month.

27,273. But is there any water let off?—Yes, they have a dry drill and a wet drill. Probably a dry drill may take place once a month, and a wet drill probably once in three months.

27,274. Do you mean to say that there is any school where they flood the premises with water once in three months?—No, it is scarcely flooding. They put the hose on to the hydrant and then direct the hydrant to the top of the building, and the water goes right over the building and then down the drains on the other side.

27,275. (*Mr. Pember.*) How long would they go on like that?—As long as they like. We have no control over them. The object, of course, is a sort of supplementary fire insurance. It enables them to cope with an outbreak of fire at the very earliest stage on their own premises: and a charge for a 3-inch hydrant is three guineas.

27,276. (*Chairman.*) Do you mean to say that you charge them nothing for the water that they squirt over their roof in this way?—No, we do not.

27,277. When there is no fire?—The three guineas covers that.

27,278. (*Sir John Dorington.*) Why do you add this then: "To be used in, and in case only of, any fire upon the above premises"?—Does it not say, "except with the consent of the company?"

27,279. No, it does not say anything else?—I thought it did.

27,280. "Description of pipe or pipes." "Purpose for which the supply is required." "To be used in, and only in case of, any fire happening in the above premises"?—We do not adhere to that. I thought it was "Except on notice to the company;" I thought those words had been inserted.

27,281. (*Chairman.*) You do not adhere to that, but you might adhere to that; you bind them to pay the three guineas a year, and only to use the water in case of fire;—As a matter of practice, we do not.

27,282. (*Mr. De Bock Porter.*) Is it wise to put it on your instructions in this way, if it is not a matter of practice?—I was under the impression that we had modified that notice by saying "Except on notice to the company." I thought it was so.

27,283. (*Sir John Dorington.*) That seems to prohibit drill purposes?—It is well understood that they can use it for drill purposes.

27,284. (*Chairman.*) I do not know whether it is well understood—you put it in your agreement—"Anything done in breach or attempted breach of this agreement, shall be 'restrainable by injunction'?"—Yes.

27,285. You might get an injunction against any drill?—If the court would give it.

(*Chairman.*) Of course they would give it.

(*Mr. Pember.*) The court would give it sharp enough. I suppose the real truth is that they are obliged, in

order to prevent really an abuse of the power, to have a pretty stringent agreement on the surface; though, as a matter of fact, as he says, they never enforce it.

27,286. (*Chairman.*) What abuse are you afraid of from a Sunday school?—This agreement applies not merely to Sunday schools, but to music halls, theatres, and places of that sort, establishments where they have got their private fire brigade.

(*Mr. Pember.*) It is a general regulation with regard to hydrants, and, of course, these people who want it for a hydrant are obliged to come up to the general rule; you cannot have a special form for everybody.

(*Witness.*) It is a common form of agreement.

(*Mr. Pember.*) However, I do not see how it touches the financial aspect of purchase.

27,287. (*Chairman.*) It does not. I received this letter about five minutes ago, and I thought I would ask Mr. Wilkins about it. (*To the witness.*) Are you alone among the water companies in exacting agreements of this sort for three guineas from schools?—I should think not. I should think every company would exact agreements for the use of private fire hydrants; I do not know, I have no knowledge.

27,288. (*Major-General Scott.*) As regards your estimates of future capital expenditure which you put in at Question 26,867, can you answer some questions on them?—Yes.

27,289. In your last letter dated the 1st February last, you put the future capital expenditure at 2,300,000l.—Yes.

27,290. On what population is that founded?—That is estimating a population of 1,753,000.

27,291. And what decennial increase do you use for that?—27-18.

27,292. And that carried on from 1891?—No, from 1897, I was asked to forecast for 40 years. I took the estimated population on the 30th November 1897 which was 670,000; then I projected that forward for four decennial periods at 27-18, and that brought up the total to 1,753,000.

27,293. What population did you have in 1897?—670,000.

27,294. That is not exactly a census population, is it?—No, it is not a census population; the figures of the water examiner for 1881-91 give a decennial rate of increase of about 20 per cent.; the Registrar-General's, which was adopted by Lord Balfour's Commission, give 18 and a decimal, and this is our proportion of something in between.

27,295. You have applied, at any rate, that decennial increase of 27-18 to that?—Yes.

27,296. And that brings you, as you say, 1,753,000?—Yes.

27,297. (*Mr. Pember.*) Is that the final figure that you estimate?—Yes, the only figure, indeed.

27,298. (*Major-General Scott.*) I should like to refer you to Mr. Lass's Tables for December 31st 1897, and March 31st 1898; on page 9 the total capital employed is given as 1,902,094l.—Yes.

27,299. And the average daily supply approximately is about 23,688,000, is it not, in 1897?—Yes, that would be it.

27,300. So that your future supply in 1937 bears to the present supply the ratio of about 100 to 38; it is 23,688,000 to 61,889,000, or something of that sort?—Yes, that is so.

27,301. I observe that your capital expenditure, taking what you have given here, does not really bear the same ratio?—Naturally it does not.

27,302. The increased capital does not bear the same ratio to the existing capital?—Naturally.

27,303. Why not?—That is just one of the elements of our future prosperity. We have hundreds of miles of mains now laid which we hope to be tapped very much more frequently without incurring one penny of expense. That would be one thing. Then, of course, the filtration area may not require to be increased in the same ratio, quite.

27,304. In the first place, with regard to the mains, there is a limit to their carrying capacity, with a reasonable amount of friction?—Yes, but I do not think that would apply to the ordinary service mains, it would, of course, to the trunk mains.

27,305. Of course, if you try to force more than a certain amount of water through a pipe the friction increases so rapidly that it becomes after a certain limit is reached very uneconomical?—Quite so.

27,306. You have to increase your capacity by adding mains to your system?—Yes, that would be so.

27,307. Re-inforcing the others that already exist?—Yes.

27,308. That being the case, of course, the reserve capacity of your present mains, whatever it may be, would become exhausted?—Yes.

27,309. And also even in 1937 you will have to have some reserve?—Yes. But I do not think you can calculate upon the same amount of reserve in 1937 as we have got now, because as regards part of our engine power we have got a reserve, practically, of 100 per cent. very nearly over our average need. As you increase your supply you would not increase your reserve in the same percentage.

27,310. Then, of course, at the present time you are deriving your supply, practically, without the expense of storage?—We have only five days' storage at present, but, as you know, we have got works in progress at Molesey which will give us 20 days' storage.

27,311. That is not included in the capital put down in Mr. Lass's account is it?—No.

27,312. All that expenditure is to come?—Except a very small amount.

27,313. Then your supply of 61 millions, or whatever it may be, will I presume have to be derived from the Thames?—No, we anticipate that at least 10 millions a day out of that 60 millions odd will be derived from wells and from the gravel beds. We are now sinking a well at Selhurst, and if that experiment proves satisfactory and successful, we shall sink wells in other parts of our district.

27,314. Do you expect to get 10 million gallons a-day from wells?—Yes.

27,315. (Chairman.) That would leave about 50 million gallons a day from the Thames?—Yes.

27,316. Lord Robert is there, I warn you?—I am much obliged to your Lordship, only it is on the south side of the Thames, Lord Robert; we are not going north.

27,317. (Major-General Scott.) Double your present amount, in fact, from the Thames—practically 50 millions?—Yes.

27,318. Double?—Just about.

27,319. Has all that been taken into consideration, including the storage on the Thames, which you will have in future to provide?—Yes, I do not like to be tied to these figures because one never knows what use may be made of them; but, roughly speaking, the storage would account for about half of the 2,300,000l. Of course it is very difficult to forecast capital expenditure so long in advance.

27,320. But at the same time we have had a great deal given to us?—The estimates have been very carefully prepared.

27,321. I have no doubt they have. We have had a great deal of evidence with regard to the amount of storage necessary for a given supply, which, I suppose, you have seen?—Yes.

27,322. With that knowledge this estimate practically has been framed?—Yes.

27,323. What do you suppose your storage would have to be for these 50 millions?—About 2,500 million gallons roughly speaking.

27,324. And for the pumping power into the reservoirs, has all that been taken into consideration?—Yes.

27,325. Have you taken into account that you will have to deliver the water on an average at a greater distance from your sources of supply?—I am not sure that we shall.

27,326. At the extremities of your district, if you cover all your district?—You see we have already reached the extremities of our district in every direction.

27,327. But you have not covered the whole supply have you in your outside district?—I think we have; there is the southern fringe of Merton and Malden.

27,328. That will all be filled up eventually?—It is being rapidly filled up in Merton.

27,329. Therefore a larger percentage of your population would be at a distance than is the case now?—I do not think so. Our works were so designed as nearly as possible to serve in both directions, that is to say, they run along the centre of our district.

27,330. You see, looking at it broadly, it requires some explanation to understand why a supply of nearly three times the present amount can be given for practically twice the money?—Half a million more.

(Mr. Pember.) Would you forgive me. Is it quite three times? Because, you see, they look forward to 50 millions from the Thames.

(Major-General Scott.) I am taking the whole amount—61 millions.

(Mr. Pember.) But then he says, "I am not going to get that from the Thames."

(Witness.) 10 millions we hope to get from wells, and we should save on that very considerable item. We shall save storage reservoirs, and we shall save filtration plant.

27,331. (Chairman.) Do you mean to deliver your water from wells without filtration?—Yes, from the chalk.

(Mr. Pember.) I do not think Kent filters.

(Witness.) We shall do just the same as the Croydon Corporation. I have not the slightest objection to supply you with the details of this estimate so long as it is understood that it is merely an estimate, and that it is one that I could not pledge myself to in detail, however carefully it has been prepared.

27,332. (Chairman.) I take it from you that you have gone thoroughly into all these questions?—The engineer and myself have given some days to it. It is not arrived at all hastily, or by rule of thumb.

Cross-examined by Mr. BALFOUR BROWN.

27,333. First with regard to the question of trustees. The trustees that are allowed to hold in your company, are those who either under the will or the instrument creating the trust are allowed to continue investments in the same place?—That is in the shares; of course our debenture stock is strictly—

27,334. I know that; I am speaking of shares. The same thing, of course, must have occurred in a great number of other companies besides yours?—Water companies do you mean?

27,335. Water companies?—Certainly; I have no doubt.

27,336. And in water companies that have been purchased by corporations?—Nothing like to the same extent I should think.

27,337. Have you gone into any one single water company except your own to find out how many joint accounts there are?—No; I could not possibly do it.

27,338. With regard to the argument that you have read to the Commission with regard to the Lands Clauses Act, as I understand your view is that if purchase is to take place it ought to take place on the basis of that Act?—Yes.

27,339. And according to you, that would be fair, not only to the company but to the purchaser. That is what you mean?—It amounts to that.

27,340. And you said that if it were purchased under the Lands Clauses Act and the works were transferred, there would still be a remunerative return in the hands of the purchaser?—We think we have got an excellent property.

27,341. Will you try to follow the question—I know that; you think you have got a property that would be increasingly valuable in the future—that is your idea?—Yes.

27,342. If it is transferred upon fair terms by an arbitration?—Under the Lands Clauses Act?

27,343. Under the Lands Clauses Act you do not think it will weigh upon the purchaser?—I do not; except of course in the first few years, because you will pay under discount for prospective advantages, and until those prospective advantages come into fruition, of course, necessarily, during the first few years you will be at a disadvantage.

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27,344. You entirely concur, I think, with the view which I ventured to express earlier, that you do not want anything in the shape of a bonus, but merely to have the full value of your holding, including all prospective value?—I do not quite know what you mean by bonus.

27,345. If you cannot follow it I will pass from it; it is more an argument of yours?—It all depends upon what you mean by bonus.

27,346. I will put it in another way; supposing you get the full and fair value of your shares just now, the present value, plus prospective value, what more do you want?—A good deal more than that.

27,347. What?—There will be the cost of reinvestment, and there will be the cost of delay in obtaining likely investments. If your proposal is carried out, of throwing a large amount of money on the market, there will be the further element of the temporary appreciation of trustee funds, trustee stocks.

27,348. Is that all?—All I contend for is, that the companies should receive what an arbitrator under the Lands Clauses Act would award. I do not know that I can go into details now.

27,349. You have mentioned three elements?—I am not familiar with arbitrations under the Lands Clauses Act; not sufficiently familiar to go more into details.

27,350. You have mentioned three elements, the cost of re-investment, possible loss by delay in getting an investment, and also possible appreciation by throwing a large number of buyers on the market at one time?—Those are the three things that occur to me at the moment.

27,351. There is nothing else that occurs to you?—Not at the moment.

27,352. Now you object altogether, as I understand, to any special clause?—I do indeed.

27,353. Are you the Mr. Wilkins that gave evidence on behalf of the Vestries Bill in 1891?—I am, and I believe you are the Mr. Balfour Browne who then appeared for the Lambeth Company.

(Mr. Balfour Browne.) Very likely.

27,354. (Chairman.) Appeared for whom?—For the Lambeth Company. We have changed places, my Lord.

27,355. (Mr. Balfour Browne.) I do not think, however, I gave evidence as you did. I find that you put in a resolution, which is to the following effect. I am glad to see that you were a municipal officer at one time, and you were no less efficient, I believe, as clerk to the vestry of St. James's than you are as a secretary to a waterworks company?—I think I can save time, I merely put those resolutions in in a representative character. I do not father them at all.

27,356. It is the opinions of the vestries I want to get the benefit of, not your opinions. This is the resolution: "That in view of the fact that the quinquennial re-valuation of the metropolis now in progress will be to augment the charge to the consumers for the same supply of water as enjoyed by them at the present time, and thereby to increase by a very large sum the value of the property of the water companies, the Government be requested forthwith to introduce a Bill to enable the London County Council, or some other properly representative body, to acquire the undertakings of the eight water companies now supplying London, or some of them, by agreement, or, failing agreement, to create a board of arbitrators to settle the terms of transfer by compulsory power or to give power to establish an independent supply." That was put in by you as representing the views of the vestries promoting that Bill?—Yes, that resolution was framed contrary to my own advice though.

27,357. Very likely?—I am not responsible for it, and I do not agree with it.

27,358. (Mr. Pember.) Were the vestries unanimous; I think I cross-examined to show they were not?—You submitted me to a very severe cross-examination. I remember I went straight home from the chair to bed on one occasion.

27,359. I am very sorry for that?—No, they were not unanimous. There was a good consensus of opinion at

that time in favour of the transfer; but that opinion has modified considerably since.

27,360. (Mr. Balfour Browne.) I hope my more delicate methods will not result so seriously?—Oh, it was not the result of Mr. Pember's cross-examination.

27,361. I thought you connected it with that?—No, it was the result of influenza.

27,362. The next resolution that you put in was: "That as the London County Council has no power to introduce a Bill into Parliament for the purchase of the water companies' undertakings, the vestries and district boards represented at this conference be advised (following the precedent successfully set in the case of metropolis gas legislation) to unite in giving notice of and preparing a Bill for such purpose, and for power to set up a competing supply"?—Yes.

27,363. So that, apparently, at first the vestries were desirous that the London County Council should have power to purchase, and also, apparently, that there should be a competitive supply?—The competitive supply did not appear in the Bill.

27,364. It did not?—No, but I think, perhaps, I ought to explain what my position there was, I was at that time vestry clerk of St. James's.

27,365. Yes, so you have said?—We had a very active municipal gentleman, a member of the vestry at that time, Mr. James Beal, who was also a member of the London County Council. He got the vestry of St. James's to call a conference, and I was requested to act as the honorary secretary to that conference in the initial stages; and I continued to act at the request of the conference.

27,366. And you were, as I have said, the principal witness on behalf of that Bill?—Yes.

27,367. (Chairman.) I have never heard who were the vestries who brought forward that Bill. Who were they?—The vestry of St. James's was the principal one; they bore the bulk of the expenses.

27,368. What other vestries?—There was the Wandsworth District Board; there was the Holborn District Board.

27,369. (Mr. Balfour Browne.) And any others?—Yes, the Kensington Vestry was represented; St. Margaret and St. John, Westminster, were represented at the first stages, but they subsequently withdrew.

27,370. (Mr. Pember.) Five altogether. How many vestries are there?—I think at the first meeting that was called—speaking from memory—there were probably 30 vestries represented. When the Bill came before Sir Matthew White Ridley's Committee, the number of vestries then supporting it had fallen down to about 10; and when it came to be a question of paying the expenses it was still further reduced.

27,371. (Mr. Balfour Browne.) The scheme of this Bill was, as I understand, first, that there should be a water trust, and, secondly, that the London County Council should have the option of coming in within a certain time?—Yes, the object of putting that forward was to give Parliament the option of saying whether a body should be constituted for the express purpose—an elected body was proposed by that Bill—or whether the London County Council should be the water authority. It was never supposed the Bill would pass in the alternative form.

27,372. No, I see that the purchase was not to take place under the Lands Clauses Act, curiously enough? No, it was not.

(Chairman.) Was it not?

(Mr. Balfour Browne.) No.

(Witness.) No, it was not. It was to take place under the Lands Clauses Act, with a special instruction to the arbitrator to take into consideration the question which had just then been referred to Lord Balfour's Commission.

27,373. And further than that?—No, I think not,

27,374. It was subject to such further terms and conditions as the Act provided, and one of the terms and conditions was this—(I have not read the whole): "In estimating the amount of compensation payable in respect of the undertaking of any company, the

"board of arbitration shall have regard to the value of such undertaking prior to the introduction into Parliament of the Bill for this Act, and shall not take into consideration any power possessed or claimed to be possessed by any company under the Waterworks Clauses Act, 1847, or otherwise to make up any deficiency in the dividends of any previous year to the rate prescribed by any special Act of any company, or by the said Waterworks Clauses Act, 1847." So that you barred the back dividends?—I was not aware of that. I had forgotten it.

(Chairman.) Was that so in the Vestries' Bill?

(Mr. Balfour Browne.) Yes, my Lord.

(Mr. Pember.) But the London County Council opposed it, and everybody opposed it.

27,375. (Chairman.) I have got firmly in my mind the Report of Lord Farrer upon the Vestries' Bill, in which, on the contrary, he seems to assume all through it was to be under the Lands Clauses Act, and says it would be a monstrous thing?—Sir Thomas Farrer made a very long report upon that, as chairman of the Water Committee of the County Council, opposing it on the very ground that it was too liberal to the water companies.

(Mr. Balfour Browne.) That is so; I have read sub-section 14.

(Chairman.) I had forgotten that; but I will take it from you, Mr. Browne.

27,376. (Mr. Balfour Browne.) There is one thing I think that you have said that I am inclined to ask you to emphasise in another connexion. You say equality of charge and equality of burden are not synonymous; that is to say, in different parts of London, although you may say the rent is 50*l.*, we will say, the house you would get for 50*l.* would be entirely different?—Yes.

27,377. And, therefore, the consumption of water in one house of 50*l.* might be entirely different in quantity from the consumption in a house in another place where the rent was 50*l.*; is that so?—Yes.

27,378. Therefore, you entirely agree with the criticisms that were passed on Mr. Hawksley's Table, comparing 18 different towns in England, as if rateable value did represent equality of burden?—No, I do not criticise Mr. Hawksley's Table; and Mr. Hawksley's Table shows exactly what it purported to show.

27,379. But the Table purported to show upon absolute equality of rating in all these 18 towns?—Yes, that is as far as it went. It did not purport to show equality of burden.

27,380. You said one thing, I think, that wants correcting. I daresay you know that, although in England the county councils are not the water authorities, in Scotland, under the Act of 1889, they are made the water authorities; are you aware of that?—I did not pay attention to Scotland, because Scotland is a long way from London. I was speaking then, of course, of the London County Council and the surrounding counties.

27,381. Now I want to correct a mistake you fell into with regard to the evidence of Mr. Halsey. You led us to believe yesterday—not, of course, intentionally—that he had suggested the raising of the Southwark and Vauxhall rates to some level nearer to yours. What he did say was that, in the event of amalgamation, it would mean a bringing up of the one, and a lowering of the other?—Exactly.

27,382. I do not think you gave that impression yesterday, but that is what he said?—That is what I intended to convey. Of course, it would only come in in amalgamation.

27,383. And that is one of the reasons, really, against amalgamation?—I am not sure that it is.

27,384. My Lord asked you about the charges of the company, and you said that you stuck to them because they were part of the parliamentary bargain?—Yes.

27,385. Now, let me follow. You know Norwood, the part of your district just outside the circle drawn round Croydon, where you and Croydon can supply?—No, Croydon cannot supply outside the circle.

27,386. Inside the circle?—Oh yes, inside the circle; I beg your pardon.

27,387. There the parliamentary bargain is that you can charge so much?—Yes. 21 Feb. '99

27,388. But, as a fact, you do not charge it?—In Croydon, you mean?

27,389. Yes?—No, for the reason I gave you yesterday.

27,390. That means that the competition of Croydon has cut down your parliamentary bargain in favour of the consumer?—No, it does not, indeed.

27,391. Does it not?—No.

27,392. You will, perhaps, explain?—I thought I made that clear yesterday. The allegation was that the people of Croydon were bringing pressure to bear upon the water committee of the Croydon Corporation, on account of the alleged inferior quality of the Lambeth water. It was suggested to me that the inferior quality of the Lambeth water was represented by *£ s. d.* I said, "Very well; we will test that," and we reduced the price to the level of the Croydon Corporation, in the year 1894, and since that time we have not had a single complaint of inferior quality. That was the reason.

27,393. As a fact, in those districts you are charging the same price as Croydon?—In Croydon, yes.

27,394. Is it a fact that where you are in competition with the Southwark and Vauxhall, for instance, with reference to an estate that has been newly laid out to-day, if I came as a builder to you, would you give me the water at the rates of the Southwark and Vauxhall?—No, we are not in competition.

27,395. Is it a fact that it takes place?—No; it does not.

27,396. (Chairman.) Do not you in the district where you are in competition with the Southwark and Vauxhall charge their rates?—In Lambeth there are no new estates, my Lord. Do you mean taking down houses and building new ones?

27,397. (Mr. Balfour Browne.) No. Suppose an estate is being laid out in a district which is common to both, where I can get the water of either, do you mean to say you would not give me the water at the Southwark and Vauxhall price?—Only in what I call the old district of the company—not in Battersea, for instance.

27,398. I do not care where it is, but in certain places you do?—We should in Lambeth, whether to an old house or to a new one—the lower part of Lambeth, I should say, not, of course, Norwood.

27,399. I have two or three illustrations of small houses with a rateable value of 29*l.* Barrington Road, is, I think, one (I daresay you will not recognise it, you have so many) rateable value, 29*l.*; Lambeth Company's charge, 1*l.* 9*s.* Kyrle Road, 29*l.*; Lambeth Company's charge, 1*l.* 9*s.* Then when you come to Sarsfield Road, rateable value 29*l.*; Lambeth Company's charge 3*l.* I have got the notes if you want to see them?—No, I have no doubt that is correct.

27,400. (Chairman.) To what do you ascribe that, except the competition of the Southwark and Vauxhall?—The continuation of the old practice, as I say, in 1848, when these rates were considered—our present rates were fixed originally in 1834, and they were confirmed in 1848—Mr. Simpson said that from the beginning of the company, the original district of the company, the lower part of Lambeth had been charged on a certain rate—roughly 1*s.* in the pound on the rent—that he should not recommend the directors to increase that rate, but certainly to charge the full rate in the upper district.

27,401. Have you the slightest doubt that if you had not had the Southwark and Vauxhall at your doors there you would have increased the rate in that district?—I do not think we should. I think we should adhere to the pledge given by our witness.

(Chairman.) He could not have given a pledge.

27,402. (Mr. De Bock Porter.) In the Croydon district the competition has been quite recent?—It has been going on since 1848.

27,403. Recent, compared with the old Brixton rate, which you spoke of yesterday?—Yes.

Mr. H. Wilkins. 27,404. You have abated your charges in the Croydon area because of the competition?—No; it was the allegations as to quality.

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See
28,683.

27,405. (*Chairman.*) It was a desire to show that there was no preference as to quality?—You see, the point is this: if it got abroad that the quality of our water was very inferior, we might suffer a very heavy pecuniary loss, and it answered our purpose to come down to the Croydon charge to dispose of that allegation; and, I think, we have effectually disproved it.

27,406. Do those Croydon charges show a profit, or do they show a loss?—Whether they do or not is immaterial. They were 700 houses out of 100,000, and it has disposed of an allegation of inferior quality.

27,407. (*Sir John Dorington.*) And one person has transferred himself from you to the other company?—Last year.

(*Sir John Dorington.*) And how many from the other company to you—

See
28,683.

27,408. (*Chairman.*) 69. I think you said?—I could not say as to that. We got 69 new ones in that district.

27,409. You do not know which of those are transfers?—We have had transfers. As I tell you a doctor, I was told some time ago, had recommended a patient of his to transfer himself to our water for dietetic purposes, simply because our water has less chalk than the Croydon.

27,410. (*Mr. De Bock Porter.*) The 69 persons who came to you, would not have come to you if your charges had not been level with the Croydon rates?—I do not know.

(*Mr. Pember.*) That is what he wanted to prove. He wanted to prove it was a question of the rate, and not a question of the quality of the water, and whether he lost or won by the transaction he did not care twopence. That is not competition.

(*Witness.*) Suppose we had gone into arbitration, and we had to meet a serious allegation from the Croydon Corporation that our water was inferior to theirs, you see what a damaging effect that might have upon the mind of the arbitrator.

27,411. (*Mr De Bock Porter.*) The whole transaction appears to bear some relation to competition, at any rate?—I really cannot see it. It was done to dispose of an allegation of inferior quality.

(*Chairman.*) Were all the doctors in Croydon sending their patients to you, as they might to Kissingen or to Aix.

(*Mr. Balfour Browne.*) Or Carlsbad.

(*Witness.*) I am afraid we have not yet attained to that. Our water does not contain medicinal qualities.

27,412. (*Chairman.*) I thought you said the doctor had recommended his patient to come to you for dietetic reasons?—It was a case of gout or rheumatic affection.

(*Mr. Balfour Browne.*) Perhaps he was a shareholder in the Lambeth Company.

27,413. (*Sir John Dorington.*) It was a question of purity of water against chalk stones?—That was the point.

27,414. (*Mr. Balfour Browne.*) You said, as I understand, that Croydon had never negotiated with you, and had never taken any steps to get from you that portion of the district which was within the borough?—If I said that, that was going rather further than I intended.

See
12,070.

27,415. I think you said it. Mr. Martin was asked by one of the members of the Commission, or by my Lord, "Have you ever tried to negotiate with the Lambeth Company for the purchase of that little small area that they supply of your borough," and he said, "We approached them four or five years ago, through the late town clerk, and found that they absolutely refused to consider any negotiation of the kind. It was absolutely out of the question dealing with them, and we never regarded it as a practicable subject for a Bill promoted by ourselves alone." (*Q.*) You could not agree with them in fact? (*A.*) Well, it never came to negotiations, we found they would not entertain the proposal at all, and

"so we did not press it any further?"—Yes, I was party to that. Mr. Elborough called upon me in 1894, soon after my appointment. I knew Mr. Elborough before I went to the Lambeth Company, and he asked me to enter into communication with him upon the basis of the transfer of the Company's undertaking in Croydon to the Croydon Corporation. I put it to him, in view of what was going on with the London County Council, how could he expect us to enter into negotiations then. He then said, "suppose we proceed upon this basis: if you are compelled to sell to the London County Council, will you have any objection to enter into a separate bargain with the Croydon Corporation." I said, "Of course, that must depend entirely upon the course of events." That was the extent we went to.

27,416. I want to ask you one question about what you called, I think, "the atrocious sinking fund"—was not that the expression?—Perhaps I ought to say also what was in my mind. I had forgotten that negotiation. What I had also in mind, when I said I had answered the question too broadly yesterday, was that in 1884 the Croydon Corporation promoted a Bill for powers to supply in our district. See
26,744

27,417. (*Chairman.*) In your district?—Yes, in our district in Croydon, beyond the two mile circle. But that was withdrawn by the promoters, on the suggestion of the Committee that the Lambeth Company had made no default.

27,418. (*Mr. Balfour Browne.*) I thought you petitioned against it, and the Bill was withdrawn?—That part of the Bill was withdrawn. The rest of the Bill went on—the general police and sanitary powers.

27,419. Just one question about the sinking fund. You said, I think, that you are spending at the present time something like 200,000*l.* which would not increase your earnings?—Not directly increase our profits by a penny.

27,420. Is that expenditure in the view of the directors of your company necessary or unnecessary?—Necessary, clearly.

27,421. Therefore, without that expenditure, your present income is not well secured?—I do not think that quite follows, because these storage works are in anticipation of the increasing revenue and the increasing district. If we had not anticipated any increase in our district, we should not have gone to the expense; or to so large an expense rather.

27,422. You can conceive, of course, of a case where a company is either supplying unfiltered water, or has not sufficient storage. If that company filters its water, or provides the storage, it is only doing the duty that it ought to have been doing before, is it not?—Yes.

27,423. If so, then it is only securing its present revenue?—No, it is doing more than that. It is making provision for a future revenue.

27,424. Not necessarily, unless the filters are too large for the present supply?—That is, of course, so.

(*Mr. Balfour Browne.*) If they are too large for their present supply, it may be looking to the future; but so, far as it is intended merely to filter the present supply, it is merely securing the present revenue.

(*Mr. Pember.*) Of course, they are only productive in so far as they provide for a reserve.

(*Witness.*) As a matter of fact, our filter beds and storage must always be in excess of present requirements.

(*Mr. Balfour Browne.*) I have certain corrections here of Mr. Wilkins' corrections, but I really have not followed them. They are corrections made by Mr. Haward, but I think the best thing to do is to try and understand them first, and then put them on the notes. Mr. Wilkins, of course, shall have an opportunity of seeing them, but I do not really follow them at this instant. They are a little complicated, and I do not wish to waste your Lordship's time.

(*Chairman.*) Very well.

(*Lord Robert Cecil.*) I should like to ask one or two questions.

(*Chairman.*) I foresaw you were coming, Lord Robert.

Cross-examined by LORD ROBERT CECIL.

27,425. At Question 26,722, you were asked, "Do you think that some sort of control over the amount of pumping from wells might be expedient, so that you should not drain the wells of all your neighbours throughout the county," and you say, "No, I think we should object to that." Do you see that?—Yes.

27,426. Now, I just want to ask you how far do you go? Supposing it were shown that the operations of a water company were draining not only the wells but affecting the streams of a county, do you still say that?—Yes, I do. What I say is that if you do that at all you must alter the general law of the land.

27,427. So I understand. I will come to that in a moment?—That is my position.

27,428. But in itself do you think it would be an unreasonable alteration of the law?—Yes, I do.

27,429. Why?—For various reasons, because arrangements have been made on the existing law for generations, and you might deprive an innocent person of very valuable property.

27,430. Suppose you take care that that should not be the effect?—If you are prepared to compensate the water companies for any rights you take from them, that might, of course, be open to argument.

27,431. Suppose it should be said you shall not drain them more than you have done at present?—That would not be sufficient.

27,432. Why not?—Because you are depriving them of prospective value. You are as bad as the County Council of London in that case.

27,433. Of course it is a question of public policy, but in itself do you see any principle in the rule of law that there is no right to object to the abstraction of underground water?—You see, if you applied it to water companies you would have to apply it to every other owner of land.

27,434. I am coming to that in a moment. I am asking you as to the principle. Do you see any objection in principle?—Yes, I do, because I do not see where I should be landed.

27,435. How do you mean, you do not see where you would be landed?—I do not see what would be the end of it. It would be a very far reaching thing to alter the general law of England with regard to underground water.

27,436. It was put to you by Major-General Scott, I think, that if you put poison down a well and it leaks into a neighbouring well, that can be stopped?—Yes.

27,437. Not only so, but if you bring water into a reservoir and it leaks into a neighbouring mine and floods the mine, that can be stopped?—That would depend upon the parliamentary powers.

27,438. No, forgive me, unless there was actual power to do that. The case of *Rylands v. Fletcher* decides distinctly that, apart even from negligence, you are not entitled to put water so that it will flood your neighbour's mine, negligence or no negligence?—That opens up a totally different consideration.

27,439. I quite agree that if you bring water on your land so that it injures your neighbour you are liable, but if you take water from your land so that it injures your neighbour, you are not liable?—No.

27,440. That is the position of the law?—Well, broadly, it is.

27,441. You think that is a reasonable position?—Yes, because all existing arrangements are made in accordance with it and with a full knowledge of it.

27,442. You say that water companies are in no different position from brewers or anybody else?—Not in practical effect.

27,443. There is this difference, is there not, that companies have been given by the Legislature certain powers without which they could not carry on their business?—Well, of course, a company must be constituted by law.

27,444. Without those statutory powers the water company could not carry on its business at all. It has received something from the Legislature?—But there is nothing to hinder Lord Rothschild or any other millionaire, Mr. Andrew Carnegie, or anybody else

who has got the money, from starting a waterworks for the supply of his own estate.

27,445. Nothing whatever—(Chairman.) Or for the supply of London?—Provided he gets an Act of Parliament.

27,446. (Lord Robert Cecil.) Provided he gets statutory powers to do it?—He could not break up the streets.

(Sir John Dorington.) No, he could not break up roads to lay pipes.

27,447. (Lord Robert Cecil.) He could not take pipes through other people's land. He would not have any of the ordinary compulsory powers which enable a water company to carry on its business?—He could not do it. He would be subject to indictment if he opened a road.

27,448. It is not at all uncommon, is it, for Parliament to fetter a statutory company in the exercise of rights that an ordinary landowner would have. Take the case of surplus lands in a railway company?—Of course, a statutory company is the creature of Parliament, and has to exercise the powers which Parliament has given to it. But it is quite another thing to suggest that Parliament should abrogate powers which have been exercised in accordance with existing statutes.

(Lord Robert Cecil.) That is a different point, I quite agree. On the question of whether a statutory company is absolutely on all fours with a private owner of land, these questions are material, are they not? If Parliament gives to a company certain statutory rights which enable it to carry on its business, it is perfectly fair for Parliament also to place upon it certain statutory restrictions greater than ordinary owners of land labour under.

(Mr. Pember.) To start with, we should all agree with you, Lord Robert; but not to alter the law.

27,448a. (Lord Robert Cecil.) Your objection is really reduced to that, therefore—that it is entirely a question of whether it is fair to take away rights which these companies, you say, have got. That is the whole point?—It is not the whole point, but it is the greater part of the point.

The witness withdrew.

Recalled,
Q. 27,450.

(Mr. Pember.) I ought to mention, my Lord, before you go into the Chelsea case, that in case there is any point which yourself, or any of your honourable colleagues would like to ask specially, the chairman and engineer of the Lambeth Company are at your service.

(Chairman.) Yes, I quite understand, but unless they have something to add to what Mr. Wilkins has said it is unnecessary.

(Mr. Mellor.) Something that is material.

(Mr. Pember.) I do not feel that they have.

(Chairman.) We should not derive the least false impression from their not appearing. On the contrary, it is very convenient that one witness should represent each company, I think. Is there any one witness who could represent Chelsea?

(Mr. Richards.) The secretary is the chief witness, my Lord, but the chairman would like to make a short statement.

27,449. (Mr. Claude Baggallay.) Your Lordship will give me at some time an opportunity to clear up that 40,000*l.* about the Southwark and Vauxhall.

(Chairman.) Certainly. I think you had better explain it now, and we will take the Chelsea case next Monday, if the chairman will be good enough to attend then.

(Mr. Claude Baggallay.) I have written out the explanation, which I said I would prepare for your Lordship, and I propose, my Lord, to read that, as I have prepared it. At Question 3731, Mr. Gomme put in a summary table, on which it is stated that the capital of the Southwark and Vauxhall Water Company "as it now stands" includes 40,481*l.* "in excess of" the amount allowed by Parliament in previous "revision." It appears that at Questions 3834 to 3836, Mr. Gomme tried to explain how he arrived at the sum of 40,481*l.* He said that the 40,481*l.* were made up by adding together two items, namely, item (1) the

See
3434-36;
24,982-42;
25,510.

21 Feb. '99 difference between 400,051*l.* being the aggregate amount of the expenditure or money laid out by the company, and as the result of which works were in existence in 1852, and 423,600*l.* raised by the company's Act of 1852—the difference between 423,600*l.* and 400,051*l.* being 23,549*l.* The second item was the difference between 292,932*l.* in respect of works of the company up to the end of 1845, and 276,000*l.* the amount at which those works were valued in the company's Act of 1845, the difference between the 292,932*l.* and the 276,000*l.* being 16,932*l.* Now, if you add these two differences together—the 23,549*l.* and the 16,932*l.*, you get the whole of the 40,481*l.* which are mentioned in the column of the summary table handed in at Question 3731. You will remember what the allegation is at the beginning—that the capital of the company, as it now stands, includes 40,481*l.* in excess of the amount allowed by Parliament in previous revision—that is what the allegation is. The explanation or answer of the company is that, when Parliament fixed the capital of the company in 1852, Parliament fixed it at 423,600*l.* See the Company's Act of 1852—I need not read the preamble of it again—it appears in the preamble; and in Mr. Gomme's own table, put in at Question 3731, if you look at the second column of figures you will see that the amount, as fixed by Parliament, was 423,600*l.* in 1852, that is correct.

(Chairman.) For the Chelsea?

(Mr. Claude Baggallay.) No, for the Southwark and Vauxhall—the last line.

(Chairman.) It is 446,000*l.*

(Mr. Claude Baggallay.) No, the amount fixed by Parliament.

(Chairman.) Yes, I see.

(Mr. Claude Baggallay.) That was the amount that was fixed. Parliament fixed it at 423,600*l.*, and that figure in Mr. Gomme's column is right; it agrees with the figures recited in the preamble of the Act of 1852; and Parliament did not fix it at 400,051*l.*, as Mr. Gomme stated, inadvertently, no doubt, at Question 3834. Both the items, 23,549*l.* and 16,932*l.*, making together, 40,481*l.*, were included in the figures upon which Parliament, in 1852, rightly or wrongly—the company says rightly—based and fixed the company's capital at 423,600*l.* They were both in that.

(Chairman.) Both—the 16,000*l.* as well.

(Mr. Claude Baggallay.) Yes, the 16,000*l.* was in the original figure in 1845. That Parliament considered and fixed the Company's capital, at the time of passing each of the Company's Acts of 1845 (when the Southwark Company and the Vauxhall Company were amalgamated), 1852 (when the Company's scale of charges was fixed, and the Waterworks Clauses Act, 1847, fixing a statutory maximum dividend and giving a right to back dividends, was incorporated with the Company's Act), and 1855 (when the provisions of the Company's Act of 1852 relating to capital were repealed, and new provisions relating to capital enacted); and that, therefore, the whole of the 40,481*l.*, stated by Mr. Gomme to be included in the Company's capital "as it now stands in excess of the amount allowed by Parliament in previous revision," was allowed by Parliament in previous revision. It was all allowed in 1852. It is all included in that 423,600*l.*, and Mr. Gomme's statement must have been made under a misapprehension. I may add—

(1) That the Company did not raise a penny of the 423,600*l.* after the passing of their Act of 1852, all having been raised before the passing of that Act. (See the preamble of Company's Act of 1852.) It is recited that the whole had been raised. It would appear from Mr. Gomme's answer to Question 3834 that they had raised a portion of that 423,600*l.* under the Act of 1852. They had not. It was all raised before.

(2) The Company carried to the credit of their capital account 21,581*l.* realised by the sale of disused lands at Kennington and Vauxhall, the value of which was included in the figures upon which the 423,600*l.* were based, and thereby relieved their capital by that amount. That was at Question 24,933. That is stated in Sir Henry Knight's evidence.

(3) There is not included in the capital of the Company "as it now stands" any sum "in excess" of the amount allowed by Parliament on previous

"revision," or of the amount otherwise allowed by Parliament.

(4) There has not been any attempt made before this Commission to prove any such excess, except in respect of the 40,481*l.*

(5) The Company are not paying dividends on any capital which has not been expressly authorised by Parliament, and

(6) There are several inaccuracies of fact stated, by Mr. Gomme at Questions 3731 and 3832 to 3836, which it is not material to traverse here.

(Chairman.) Will you let me see Question 10,127 of the evidence of 1852? (*The volume was handed to the noble Lord.*) I see that does not quite correspond with what Mr. Gomme says.

(Mr. Claude Baggallay.) I have read all that evidence through, and I may perhaps tell you one thing about it, my Lord—that it is exceedingly difficult to follow any way.

(Chairman.) Mr. Gomme says that Question 10,127 of the evidence of 1852 shows that Parliament fixed the amount of your expenditure at 400,051*l.*

(Mr. Claude Baggallay.) I can tell you what I think that is due to. Mr. Gomme perhaps will follow me, and perhaps see whether he agrees. What occurred was this, I think. Mr. Lee, one of the witnesses called on behalf of the companies, put in a table to show what capital expenditure he could show to have been made on works which were then at that time in existence, and, adding that up, he found that it totalled up to 400,051*l.*

(Chairman.) That is the whole point of Mr. Gomme's statement.

(Mr. Claude Baggallay.) No, my Lord; because the difference between that and the 423,600*l.* was allowed in 1852. The whole point of Mr. Gomme's statement is put at the head of his table, that this was not allowed by Parliament.

(Chairman.) No; it may be it was allowed. That is another point. Mr. Gomme begins by saying Parliament settled that you had only spent 400,051*l.* Then, by some legerdemain or hocus pocus, you get 423,600*l.* stuck into your capital account.

(Mr. Claude Baggallay.) I will tell you exactly how it was. That is what I have been trying to show you, and what I showed the other day. In addition to that expenditure, there was somewhere between 20,000*l.* and 25,000*l.* worth of disused land at Kennington and Vauxhall. That is referred to in what I have just read. There was that land at Vauxhall which made up the difference between the 400,051*l.* and the 423,600*l.*

(Chairman.) But that land at Vauxhall did not drop like manna from heaven; it must have been part of your expenditure.

(Mr. Claude Baggallay.) No, it was a part of their assets; but it was not productive expenditure.

(Chairman.) It is not a question of assets. It is a question of what you had actually spent.

(Mr. Claude Baggallay.) The 400,000*l.* is what was actually expended on works which were then productive—were then in use. Those are Mr. Gomme's own words.

(Mr. Balfour Browne.) Which were then in existence?

(Mr. Claude Baggallay.) Which were then in existence. They were not works. They were surplus lands, and if you read the whole of the evidence of 1852 as I have done—

(Chairman.) Heaven forbid!

(Mr. Claude Baggallay.) I can assure you it is clear that disused land was put forward as one of the items which were to make up the figure of 423,600*l.*, which Parliament, after consideration, fixed as the capital of the company. That money—nearly the whole of the difference—between the 400,051*l.* and the 423,600*l.* was realised by the sale of the land at Kennington and Vauxhall—the disused land, and, amounting to 21,581*l.*, was brought in and carried to the credit of the company's capital account, which was thereby relieved to the extent of that 21,581*l.*

(Sir John Dorington.) The land had not been included before.

(*Mr. Claude Baggallay.*) It was not included in the 400,051l.

(*Sir John Dorington.*) Not turned into cash.

(*Mr. Claude Baggallay.*) It was not included in that.

(*Sir John Dorington.*) When it was turned into cash it was brought into the capital account.

(*Mr. Claude Baggallay.*) It was brought into the capital account, and Parliament included the value of the disused land in addition to the value in money of the works then in existence.

(*Chairman.*) Would Mr. Gomme tell me where he got his 400,051l. ? I do not find it at Question 10,127.

(*Mr. Claude Baggallay.*) If you will turn back a page or two, you will see it in a table there under the head of Southwark and Vauxhall. It is in the evidence of 1852.

(*Mr. Balfour Browne.*) At the bottom of page 59, my Lord.

(*Chairman.*) Yes, I see. It is stated there as capital—capital, 400,000l. Then there is an addition to the capital in works.

(*Mr. Pember.*) Where is the land mentioned ?

(*Mr. Claude Baggallay.*) The whole point, which I understand that summary table put in at Question 3731, was to show, that the company have now got capital in excess of what has been authorised by Parliament, and on which they are paying dividends.

(*Chairman.*) I think it assumes rather a different aspect. It seems to suggest that Parliament authorised, by some inadvertence, a larger amount than you had really spent; that you had really spent only 400,051l., but somehow you got Parliament to sanction a capital of 423,600l., and, therefore, you have been illegally receiving dividends on 23,000l. odd ever since.

(*Mr. Claude Baggallay.*) I think if your Lordship reads through all that evidence of 1852, you will see that Parliament could not have acted under much inadvertence. There was plenty of it.

(*Chairman.*) It is quite true that at page 59 of the proceedings of this Committee the capital is stated, on the 25th March 1852, at 400,051l.

(*Mr. Pember.*) Expended on works.

(*Mr. Claude Baggallay.*) No, it simply says capital. But there is, somewhere, a statement that that is on works now represented.

(*Mr. Balfour Browne.*) The witness is asked, at Question 10,179, "Do you mean to represent to the Committee that that 400,000l. does represent money actually expended and represented by existing works ? (A.) Yes." Therefore, it is money actually expended on existing works.

(*Mr. Claude Baggallay.*) Quite so, and, therefore, it does not include anything which is there for disused land.

(*Mr. Balfour Browne.*) I do not know ; you must have bought your disused land.

(*Mr. Claude Baggallay.*) I know, but it was not works in existence.

(*Mr. Balfour Browne.*) The land was in existence.

(*Mr. Claude Baggallay.*) I know, but it is not works in existence.

(*Mr. Pember.*) It is a small point, but it all depends whether—

(*Mr. Balfour Browne.*) I think your Lordship asked Mr. Gomme to put it in the way he did. But, so far as I am concerned, I do not think it bears upon the question of purchase at all. I do think it bears largely on the question of control. I believe that we might ask to have the question of capital gone into if the companies were to have a further concession from Parliament.

(*Chairman.*) Mr. Balfour Browne, I will be perfectly candid with you. I have listened with great attention to your witnesses, who gave their evidence with extraordinary acuteness and ability, and I certainly gathered from them that they meant to say that, "under any reasonable and fair arbitration, the arbitrator ought to be able to do what Parliament we say, should do, in the shape of control, and ought to revise these accounts, and cut down both capital account and revenue account according to the real and honest facts."

(*Mr. Balfour Browne.*) I think your Lordship must have misunderstood it.

(*Chairman.*) Very well.

(*Mr. Balfour Browne.*) I will not argue that, my Lord ; but I will argue that, if those companies are to continue in existence, then we might readjust their capital account.

(*Mr. Claude Baggallay.*) But then my point on that would be, my Lord, that Parliament having revised this capital of this company in 1845 on the occasion when the Southwark Company and the Vauxhall Company were amalgamated, having revised the capital again and fixed it in 1852, it must be assumed to have had the evidence before it and to have gone into it.

(*Chairman.*) I do not really want to prolong this, but you have not yet explained to my mind how, when you had only expended 400,051l. Parliament contrived or was induced to sanction the amount of capital 423,600l.

(*Mr. Claude Baggallay.*) Because as it is stated in the preamble the 423,600l. had actually been raised and expended.

(*Chairman.*) But your own witness puts in a table that does not show that.

(*Mr. Claude Baggallay.*) But then as Mr. Balfour Browne read out just now that is the amount of the capital which is still represented by works in existence.

(*Mr. Balfour Browne.*) I think there is some mistake about this, Mr. Baggallay—because on that very page 63 this question is asked, "(10,170) Will those works which you have excluded, in your opinion, equal the balance of the 23,600l. ? (A) Yes." Then lower down "(10,176) You have been writing off 23,600l. for by-gone and cancelled works ? (A) Yes. In making out this account of capital I was not influenced at all by the share capital or anything else ; I took into account the expenditure upon the works now in existence."

(*Mr. Pember.*) Do not you see that does lend colour to Mr. Baggallay's explanation that the 23,000l. for land was not included in the 400,051l. and that is the whole question.

(*Mr. Claude Baggallay.*) That is it and that was sold for the 21,000l. odd which Sir Henry Knight, at that question I referred to just now (24,933) said was brought into the capital account and relieved the capital account to that extent.

(*Chairman.*) It is very odd, but I find on page 63 these questions and answers, "(10,165) You say the capital upon which you pay a dividend is 303,000l., then you have a bond debt of 120,000l. making 423,000l., whereas in this capital account you put it down at 400,000l. ? (A) I have only carried to that capital account works which are now in existence. (Q) You cannot tell us what the amount of the share capital is, and what the amount of the bond debt is then ? (A) Yes, I can ; the share capital is 303,600l. and there is, at the present date, a debt of 120,000l. ; that would be 423,600l. (Mr. Merewether.)" I do not know whom Mr. Merewether represented.

(*Mr. Claude Baggallay.*) I think he represented the company.

(*Chairman.*) "But I understand you to say that you have not carried to the capital account any other than works actually now in existence ? (A) No ; works have been destroyed and those I do not include. (Q) The whole sum would be 423,600l. ?—(A) Yes. (Q) Consisting of 303,600l. and 120,000l. bond debt ? (A) Yes. (Q) Will those works which you have excluded, in your opinion, equal the balance of the 23,600l. ? (A) Yes." Therefore it is clear that Parliament in fixing your capital at 423,600l. gave you the value of your obsolete and excluded works.

(*Mr. Claude Baggallay.*) And land.

(*Chairman.*) And land if you like.

(*Mr. Claude Baggallay.*) Which were sold for 21,500l., and that is brought into the capital account.

(*Chairman.*) Mr. Baggallay, you see in the account you have put in before us that your capital expenditure is something like 38,000l. rather more than 38,000l. above the grand total of the moneys raised and the premium on the stock issued. That is, the moneys that you have raised and the premiums on the stock you have issued only come to 2,858,971l. whereas you have expended 2,897,631l. Where have you got that excess of expenditure from ?

21 Feb. '99 (Mr. Claude Baggallay.) That is authorised and not raised. I understood from the Chairman that is represented as expended.

(Sir John Dorington.) It is represented as expended.

(Chairman.) Yes. You have "expended" in the return you have furnished us with.

(Mr. Claude Baggallay.) It is covered by temporary loans, my Lord. The money is not actually raised. The capital account is in debt. That often happens.

(Mr. Pember.) I am asked, my Lord, not to let you go without reminding you on this question of revision of capital, once more, of section 39 of the Metropolis Water Act, 1871, the marginal note of which is "Ascertainment of the capital of the companies and the limits thereby imposed in reference to the schedule to that Act as to the point to which the auditor could go in revision."

(Chairman.) I know the auditor cannot go back; beyond 1869, is it not?

(Mr. Pember.) He cannot go much beyond some part of the sixty's.

(Mr. Claude Baggallay.) My Lord, I hope I have done this. I hope I have answered the suggestion that the Company are paying dividends on 40,481l. of capital which was not authorised by Parliament.

(Chairman.) I think so. I think you have answered that. What you have not quite explained is how Parliament came to authorise a dividend bearing capital on an amount larger than you had actually expended.

(Mr. Claude Baggallay.) And that, my Lord, I am afraid I cannot carry further than the point we have carried it to this afternoon. I have read all that evidence through, I have read it two or three times through, and it is very difficult to follow. I can only say that Parliament, with that evidence before it, did sanction the 423,600l., and that includes the 40,481l.

(Chairman.) I can just dimly understand that, inasmuch as you had raised 303,600l. in shares, and had got a debt of 120,000l., I can understand Parliament could have said, "Very well, that is your capital."

(Mr. Claude Baggallay.) But, at all events, whatever the Company have done with regard to that has not been done illegally.

(Chairman.) No.

(Mr. Claude Baggallay.) The 40,481l. has been sanctioned by Parliament.

(Chairman.) No; the suggestion of Mr. Gomme, if I am not doing him an injustice, is that Parliament came to a wrong decision, and ought to have allowed you only 400,051l.

(Mr. Gomme.) That is so.

(Mr. Claude Baggallay.) Then the heading of the table does not quite convey Mr. Gomme's meaning.

(Chairman.) The arbitrator, if he has the powers of an Act of Parliament, will do that for you.

(Mr. Claude Baggallay.) Mr. Gomme admits that the heading of the table does not convey that meaning.

(Chairman.) Is there any prospect of the two sides that appear before us agreeing about even a schedule of the powers of control? We had a promise.

(Mr. Pember.) Yes. The only person I can see here is Mr. Gomme. Therefore I address him. Mr. Gomme, I think you had from us a memorandum as to what the present powers of control were, and there was a suggestion made that you should look it through and compare it with the statutes and see whether it was correct or incorrect. If you could do that between this and next Monday and just let us know, or, still better, let his Lordship know whether that memorandum does correctly state the law, I think it would be a good thing.

(Mr. Gomme.) Mr. H. L. Cripps has that in hand.

(Mr. Pember.) Mr. H. L. Cripps very often has things in hand.

(Mr. Gomme.) I will ask him about it.

(Mr. Pember.) Just before Mr. Gomme goes, may I say this: I am told that one difficulty in the way is this—and I shall be corrected if I am wrong, but I do not think I am—the County Council have also prepared their own memorandum of control, but unfortunately I am told that their memorandum of control, to which they naturally hold, contains not only a statement of what the law is, but glosses on the law, either putting their own interpretation upon it or saying what it ought to be. Now, surely what we want for the guidance, or rather the assistance, of the Commission, is not anybody's gloss, but a mere statement of what the fact is.

(Chairman.) I think so. Could not some calm minds be found?

(Mr. Pember.) I think my own is sufficiently calm for the purpose. I originally had that memorandum drawn up with the assistance of my friend Mr. Bonnor Maurice, and I think you will find it is correct; but I think, to guide us, my Lord, that your idea is that the memorandum to be handed in to you as between the companies and the other side should not have any gloss at all.

(Chairman.) No.

(Mr. Pember.) But merely be a statement of what the law is.

(Chairman.) It should be simply a statement of what the law is. See 30;

[Adjourned to Monday next, at 12 o'clock.]

FIFTY-FIFTH DAY.

Monday, February 27th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
 Sir JOHN EDWARD DORINGTON, Bart., M.P.
 Sir GEORGE BARCLAY BRUCE, Knt., O.E.
 ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
 HENRY WILLIAM CRIPPS, Esq., Q.C.
 ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary*.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
 Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
 Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

(Mr. Balfour Browne.) My Lord, before the other witnesses are called I want to make an application on behalf of the Corporation of Croydon. The Croydon Corporation have read what was said by Mr. Wilkins as to what took place between them and the Lambeth Company. Inadvertently, I suppose, Mr. Wilkins has given an entirely erroneous version of what took place. I propose, with your Lordship's permission, to call the Chairman of the Water Committee who was acting at that time. I daresay your Lordship would not mind, it would only take five minutes to make the correction, and it ought to be done by somebody who absolutely knows the facts of what took place between the Lambeth and Croydon. He cannot be here to-day, my Lord, but if it was convenient to the Commission we might call him to-morrow morning if it suits your Lordship.

(Chairman.) Very well.

27,449a. (Mr. Pember.) Not with a view of explaining, because explanation is one thing and statement is another, it might be a convenient thing for you if you have still got anything in your mind with regard to that 84,000l., and the charge, or something in the nature of a charge, that was made against the Lambeth Company in the early days of the inquiry, that is to say, that they have gone behind their Act of Parliament and credited the capital account with 84,000l. which they have no right to do; it might be worth while for you to have a mere statement of how their capital account stood in 1854. We have found a copy of the capital account at the 31st of March 1854, as it was presented to the proprietors at that date. I have had a copy made and printed for you, and I will just tell you what it is, so that you may understand it. On one side of this account you will see the capital expenditure, and on the other the capital; it being always necessary, of course, to separate the one in one's mind from the other. You will see by cost of works, engines, and machinery, 517,479l. 14s. 5d.; then, less estimated amount of old works, &c. which were absolutely annihilated—and, mark the dates—between the year 1785 and the then present time—which was 1854—60,000l. We told you, if you recollect, that we wrote off 60,000l. from revenue, and 10,000l. only from capital account, making a total sum of 70,000l. That reduced the estimated cost to 457,479l. 14s. 5d. Those first items are the cost of works you see. They had also bought freehold land to the tune of 24,142l., and that

made the total capital expenditure as presented to the proprietors in March 1854, 481,621l. 18s. 9d. Now, if you turn to what the capital was at that date, you will find they had raised under three of their Acts 1785, 1834, and 1848, 301,936l. and by debentures very nearly 149,000l., making in the whole 450,886l. That left capital in debt to capital expenditure, so to say, 30,735l., because that makes up the total of the 481,621l. on the other column. Now, that 30,735l., of course, they subsequently raised out of capital which they had power to raise to a very large amount in 1848. As to the 84,000l. which we were supposed to have improperly carried forward as capital, it is moonshine; there is no such figure.

(The learned counsel handed in a copy of the capital account of the Lambeth Waterworks Company at the 31st March 1854. See Appendix T, 7.)

(Mr. De Bock Porter.) Mr. Pember, may I ask you a question with reference to this account?

(Mr. Pember.) Certainly, sir.

(Mr. De Bock Porter.) We really ought to have an account, ought we not, to show how all this capital is worked into the existing capital. You leave it at the point here in which you say the balance is provided out of the capital subscribed.

(Mr. Pember.) Yes.

(Mr. De Bock Porter.) We ought to see the capital brought right down to the present time, or to some time that is on the notes.

(Mr. Pember.) I daresay that can be done. I daresay it can easily be done. The capital has been raised from time to time since the year 1854; but might I venture to ask you this, sir, whether that would really do any good, because, if I say at once that that 30,735l. does find a place in the capital account, what more could my account show? I admit it. Do you not see, if I had taken the line of saying that that 30,735l. never finds a place in the capital account, it would be different, and then I admit at once, sir, that what you suggest would be extremely pertinent to the matter.

(Mr. De Bock Porter.) Is this specific sum shown in a subsequent capital account as having been provided out of subsequent capital raised?

(Mr. Pember.) No doubt, whether I could give you any syllabus, as it were, of the capital account, which would show you the particular occasion upon which a

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27 Feb. '99 separate sum of 30,735*l.* was raised for the purpose of putting that straight—no, I do not suppose I could. But, as a matter of fact, I admit, and what can you want more—that that 30,735*l.* has been raised and placed to capital account in a subsequent time.

(*Chairman.*) Not only placed to capital account, but converted into shares.

(*Mr. Pember.*) Yes, converted into shares or loans. I admit it. There cannot be a doubt about it. Of course, it has been done, as my learned friend, Mr. Pope, has suggested to me—I thought I had said it, but still, I will say it again, in case of accidents—it has been done, of course, out of capital subsequently raised. We do not say, at any moment, that that 30,735*l.* finds any place in the antecedent capital; if we did, then I admit once more, sir, that you want accounts to show you, that is true. I say no, we found capital in debt to capital expenditure to that amount in 1854, and, subsequently, we put it straight; and it is to be found in the, probably, something like a million of money, that we have raised since.

(*Mr. De Bock Porter.*) It is not found in any specific transfer.

(*Mr. Pember.*) No, I am quite sure it could not be; the chances would be this. Supposing we wanted to raise 70,000*l.* for some new work, I assume we raised 100,000*l.*, do you not see, and made the amount straight; it was done something like that.

(*Chairman.*) Your explanation, Mr. Pember, does not fit the charge, if I may call it a charge. This is what was said about it at Question 3792: "This company, the Lambeth Company, came to Parliament in 1848, and at that time the capital expenditure had reached 313,178*l.* odd."

(*Mr. Pember.*) May I stop you for a moment, my Lord?—not true; that is our answer to that.

(*Chairman.*) Your account does not show that.

(*Mr. Pember.*) Of course, how can I, if a man tells me I have spent 313,000*l.*, which is not the fact, and he has made a mistake, and I have only spent 301,000*l.*—how can I meet the fact?

(*Chairman.*) There is no 301,000*l.*

(*Mr. Pember.*) 296,000*l.*

(*Chairman.*) That is capital issued, 301,000*l.*

(*Mr. Pember.*) Quite so. I was wrong in saying that. 296,000*l.* is what we say. Now, look at that paper, my Lord; that is what we did say, that our capital expenditure was—296,000*l.*

(*Chairman.*) I am not upon what you said, but upon what Mr. Gomme said.

(*Mr. Pember.*) All right; I cannot help it if Mr. Gomme says what is absolutely not the fact—of course, as innocently as possible—and he says so and so is the case, and I make out, therefore, that you have carried 84,000*l.* forward that you ought not to do, and I say the real amount—

(*Chairman.*) Wait a minute; you have stopped me in the middle of a sentence.

(*Mr. Pember.*) I beg your Lordship's pardon.

(*Chairman.*) This is an extremely elaborate minute—and at that time the capital expenditure had reached 313,178*l.* 8*s.* 1*d.*, and the capital declared by the Act of 1848, section 12, was 143,800*l.*, and by section 18, mortgage 69,880*l.*, and by section 19, 12,320*l.*, making a total of 226,000*l.*, instead of the 313,178*l.*, which the company had expended up to that date. Then, ever since that date, so far as I am able to judge by the published figures, in so far of bringing forward the 226,000*l.*, the capital of the company, the 313,178*l.* has been perpetually brought forward; the result being as I think, judging by the published figures—subject to any explanation that may be given—that instead of the 226,000*l.* being included in the capital, 313,178*l.* was included in the capital."

(*Mr. Pember.*) Of course, I cannot make Mr. Gomme's figures fit mine—how can I, if mine are right and his are wrong?

(*Chairman.*) But you do not touch that date. You do not show what your expenditure had been, in 1848, compared with what Parliament declared in 1848.

(*Mr. Pember.*) We do show it substantively in the evidence which is before you. We told you what we told Parliament before and what we took it at—

296,000*l.* was one figure, and from another point of view, 276,000*l.*

(*Mr. Freeman.*) My Lord, these figures were taken by Mr. Gomme from the table put in by the company themselves in Parliament; they were actually taken from a Parliamentary Paper.

(*Mr. Pember.*) In 1852.

(*Mr. Freeman.*) Yes.

(*Mr. Pember.*) I can only tell you what was the substantial fact, that here we had in 1854 spent 517,000*l.*, minus 60,000*l.*, which we considered not antiquated, in the sense of being obsolete, but which had been absolutely annihilated between the years 1875 and 1854. Very well, that made our total expenditure up to that time 457,000*l.* That is a substantive statement. It is not an explanation of Mr. Gomme's figures, but a substantive statement, and this is a copy of a balance sheet shown to the shareholders at that time, and not made for this case. Besides that, we had spent 24,000*l.* on freehold land.

(*Chairman.*) But you have published figures from time to time?

(*Mr. Pember.*) Yes.

(*Chairman.*) In those figures, published from time to time, it is alleged that you brought forward 313,178*l.* perpetually.

(*Mr. Pember.*) I say no such figure is to be found in any published account of ours as 313,178*l.*

(*Chairman.*) You ought to show us your published accounts.

(*Mr. Pember.*) I do not mind doing that for a moment.

(*Mr. De Bock Porter.*) Could you not show us your published accounts from 1854, showing these figures down to the present time?

(*Mr. Pember.*) We will get that all out.

(*Mr. De Bock Porter.*) I do not want to trouble you, only it would give us some sort of satisfaction to see how this is brought in. We do not want it printed and put on the notes, but merely to have the matter explained to us.

(*Mr. Pember.*) Let me quite understand what you want.

(*Mr. De Bock Porter.*) We want to see how this capital has been brought into your capital account and reconciled with your capital account as it now stands—from 1848 to the present time, or at least from the time we have got the year published.

(*Mr. Pember.*) I can, from 1854 downwards.

(*Chairman.*) Apparently, between 1848 and 1854 you had not dealt with this item of 30,735*l.*, because here, in the capital account of the 31st March 1854, it still appears as a balance.

(*Mr. Pember.*) Yes, that is true.

(*Chairman.*) Therefore, apparently, that amount of capital had not been raised, even in the interval between 1848 and 1854.

(*Mr. Pember.*) Apparently not.

(*Mr. De Bock Porter.*) There are certain figures recited in the Act of 1848. We want to see those figures in the capital account as published, and the journal entries which will bring it down to the present day from the earliest date you have given us in the capital account.

(*Mr. Pember.*) What I am told distinctly by Mr. Wilkins, and which I would much prefer that he told you himself, is that in one sense there was no capital account before 1854. The real truth is, that nobody denies that before the great revision of all their affairs in 1852, for all the companies, and for Lambeth in 1848, I suppose, the accounts were not kept in modern fashion. It has been completely admitted that an enormous amount of what was capital expenditure had been paid out of revenue—out of receipts.

(*Mr. De Bock Porter.*) Only you have a point in 1848 when it is defined; surely from that point, when it is defined, we can see the capital account brought down to the dates that you have given us.

(*Mr. Pember.*) You say it was defined in 1848.

(*Chairman.*) Yes, certainly, by three sections, making a total of 226,000*l.*

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(Mr. Pember.) I suppose section 12 is the first one.

(Chairman.) They are sections 12, 18 and 19.

(Mr. Pember.) You see, my Lord, what that is—that does not deal with what had been expended at all. All it says is: “Whereas the present paid-up capital of ‘the said hereby dissolved Company’—because the company was dissolved at that time.

(Chairman.) It was reconstituted immediately.

(Mr. Pember.) Yes, quite so, but it shows how completely it was got an end of—“Whereas the present paid up capital is 143,800l.”—

(Chairman.) That is your figure in this printed paper.

(Mr. Pember.) That is so, that is the capital; it does not say a word about the expenditure—“and whereas ‘it is expedient that the company shall be authorised ‘to raise additional capital, therefore, they may, in ‘addition to the capital herein-before mentioned, raise ‘a sum not exceeding 200,000l., making together with ‘the said sum of 143,800l., 343,800l.’—not a word, once more, as to what our expenditure had been, but merely what our capital powers were, and were to be. Then it says that the new shares are to form part of the general capital, it does not deal at all with any figures. Then it says that there are certain existing mortgages, which were 130,000l., and that they had raised 47,000l., and had borrowed on debentures besides, 60,000l., and, I think, at present unraised 12,350l.—I cannot give you the sum. Then it is enacted, that sum of 69,000l. was secured by debentures and bonds—

(Chairman.) 69,880l., is it not?

(Mr. Pember.) Yes, 69,830l. “shall be charged and ‘chargeable on the works and rates of the company, ‘and in case the whole or any part of that 69,880l. be ‘paid off, it shall be lawful for them to re-borrow,” that you see is only a statement of what their capital powers were, but there is no statement whatever as to what the capital expenditure had been.

(Mr. De Bock Porter.) But, surely, you can give us the capital account immediately following the passing of that Act, when all the figures recited in the Act are grouped together, and which show the result of the balance carried forward.

(Mr. Pember.) Mr. Wilkins says there is no such thing in the books. It cannot be found; in fact, nothing can be found antecedent to this 1854.

Mr. HARRY WILKINS recalled and further examined.

(Witness.) Up to the year 1848 the whole company were the directors; it was a small company and the whole company managed the concern.

27,450. (Mr. De Bock Porter.) In 1848 when that Act was got or after that Act was passed there must have been an account constructed which showed the effect of the balances in the Act?—I should have thought so but I have failed to find it. Of course the account books themselves have long since been destroyed. What we have got are the reports which were presented year by year to the shareholders. I endeavoured to make up the capital account from 1848 to 1854, but I am sorry to say that there was a change of period; the accounts were changed from midsummer to Lady Day, and consequently I was perfectly unable to frame any satisfactory account, because the one quarter appeared twice over in two accounts without any distinction as to the quarters.

27,451. Then you are wholly dependent on the abstracts that were circulated to the shareholders?—Wholly.

27,452. You have not got the original books of the company?—No, I have not.

27,453. (Chairman.) What are the materials out of which Mr. Gomme constructed his theory—I will call it only that at present?—The 313,000l. is not the capital expended; it was the capital and capital expenditure. It is a very difficult table to understand, and as I pointed out the 313,000l. is inconsistent with another table which Mr. Gomme put in, where he said, not up to 1848, but to the end of 1849. Eighteen months after the Act was passed, our capital expenditure was only 307,000l. His 307,000l. is correct because it agrees with the amount which I say was our capital expenditure when we were in Parliament, which was 296,000l.

(Chairman.) Is Mr. Gomme here?

(Mr. Freeman.) Yes, my Lord.

(Chairman.) What does Mr. Gomme mean by saying that this amount of 313,178l. has been perpetually brought forward—brought forward where, and in what?

(Mr. Freeman.) I ought to mention that Mr. Gomme has only just this moment come into the room, and he will look into it; I mean he has not heard the discussion which has been going on; we sent for Mr. Gomme, finding it was on.

(Mr. De Bock Porter.) Can you give us the capital amounts from 1848 to 1860?

(Chairman.) Mr. Gomme said it was a compilation of his own from the evidence of 1852.

(Mr. Pember.) I know; I cannot deal with Mr. Gomme's contradictions. All I can do is, I can give you a substantive statement of what really occurred.

(Chairman.) Only your substantive statement does not meet the point you have to meet.

(Mr. Pember.) Of course, if a man says two and two are five, you can only meet him by saying two and two are four. I do not know that I can demonstrate it any better.

(Chairman.) What we want to see are the published accounts and the statements of your capital after this year 1848.

(Mr. De Bock Porter.) When the adjustment took place.

(Mr. Pember.) Of course we can give you what the gradual raising of the expenditure of capital has been, but between 1848 and 1854 (so I am told, but I must refer you to those behind me), it cannot be done.

(Mr. Pope.) Why?

(Mr. Pember.) I do not know, but they say it cannot.

(Mr. De Bock Porter.) Surely there are some books in the possession of the company.

(Mr. Pember.) Would you mind Mr. Wilkins coming back, because it is very difficult for me to be fed by whispers from behind; if you will just let him come back and say what he has got to say.

(Mr. De Bock Porter.) Perhaps Mr. Wilkins had better come back.

Mr. H.
Wilkins.

27,454. (Mr. Pember.) Why does it agree—how does 307,000l. agree with 296,000l.?—Because it carries it on 18 months; the 307,000l. is 18 months after.

27,455. How did you find out that 307,000l.?—The 307,000l. was a return made by the company to the general Board of Health in 1850; it was no doubt compiled from the accounts of the time.

(Chairman.) May I make this suggestion to Mr. Wilkins and Mr. Gomme—will you meet somewhere in the building and go through the figures on both sides?

(Mr. Freeman.) Mr. Gomme is perfectly prepared to do that. He is here now and he will meet Mr. Wilkins and go through the account with him with pleasure.

(Chairman.) Very well, I think that will be the best way; I am lost in all this. Every time we get figures which vary. Mr. Wilkins told us at our last meeting about a sum of 70,000l.

(Witness.) Yes.

(Chairman.) Which has now dwindled down to 30,000l.

(Mr. Pember.) No.

(Witness.) No, the 70,000l. is made up of the 60,000l. which was written off and 10,000l. which I presume was charged to capital, but there again the accounts show nothing clear upon that.

27,456. (Mr. Pember.) It is clear that 60,000l. was written off, you say?—60,000l. out of the 70,000l. was written off, and that left 10,000l. to be accounted for.

(Chairman.) I nowhere find this figure of 30,735l. which appears upon this account to be the excess of expenditure over capital raised.

(Mr. Pember.) Nor could you.

Mr. H. Wilkins.

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(*Witness.*) I think, my Lord, that has no bearing upon the point, if I may say so.

(*Mr. Freeman.*) If I might just mention what Mr. Gomme did, as your Lordship was asking the reason for the statement he made, he has taken the only material available to him, namely, the returns made by the companies at various years; whenever a return was made, Mr. Gomme has got those returns—which were returns made to Parliament—and has found how the capital then stood, and on that he has based his answer to the question your Lordship has referred to.

(*Chairman.*) I understood Mr. Gomme to say the other day that he had got it out of the evidence of 1852.

(*Mr. Freeman.*) Yes, my Lord, it is partly in the year 1852 and in subsequent years. For instance, in 1856 there was a return, in 1867 in 1868, and in 1871.

(*Witness.*) Yes; but Mr. Freeman, excuse me; you will see the return made in 1850 does not agree with the 313,000*l.*, if you will kindly cast the figures given there in the columns.

(*Mr. Freeman.*) I have not got the return of 1850 before me.

(*Mr. Mellor.*) You can hardly expect the Commission to settle this question of dispute between the two witnesses. Why do you not answer the suggestion of the Chairman that Mr. Wilkins and Mr. Gomme should meet?

(*Mr. Freeman.*) I did answer it. I said Mr. Gomme is perfectly prepared to do so, and to do it at once.

The witness withdrew.

Mr. F. S. Clayton.

MR. FRANCIS STEPHEN CLAYTON called and examined.

27,457. (*Chairman.*) You have been 30 years, I believe, a director of the Chelsea Water Company?—I have.

27,458. Deputy-governor for 13 years, and governor since January 1898?—I have.

27,459. I do not know that we need go into the early history of your company?—No; it is very interesting, but I do not think it is quite necessary.

27,460. You date from the year 1722, and in the first instance, brought water from the Thames?—We did so.

27,461. Near Chelsea Hospital?—Yes.

27,462. Into the neighbourhood of Hyde Park, I believe?—Yes, and we had a reservoir in the Green Park opposite Lord Palmerston's house—Cambridge House—and another one in Hyde Park at Grosvenor Gate.

27,463. (*Sir John Dorington.*) Is the Green Park the one you called Olliver's Mount?—Yes.

27,464. (*Chairman.*) Those powers of 1722 were under Statute, I believe?—Under a Statute of 8th George I.

27,465. Then George I. gave you a Charter?—He did.

27,466. By which you were incorporated under the title of "The Governor and Company of the Chelsea Water Works"?—Yes.

27,467. You got fresh Royal Warrants in the year 1726-7 for constructing the reservoir in Hyde Park?—We did.

27,468. When did those reservoirs cease to exist, do you know?—It was sometime after the 1852 or 1853 Act. Our works were to be completed by the year 1856, and it was well before 1856.

27,469. Do you mean those reservoirs existed in Hyde Park up to nearly 1856?—Yes; I can very well recollect them personally.

27,470. Whereabouts in Hyde Park were they?—Opposite Lord Beaconsfield's house at Grosvenor Gate; there is now a sunk garden on the spot with a fountain.

(*Sir John Dorington.*) I remember a reservoir in Hyde Park.

(*Mr. Rickards.*) Just by the main road driving from Hyde Park corner.

27,471. (*Chairman.*) And you had reservoirs in St. James' Park too, had you not?—In the Green Park by Piccadilly, opposite where Lord Palmerston lived. It is now Cambridge House, I think.

(*Mr. Mellor.*) I beg your pardon.

(*Mr. Pember.*) I am quite ready to admit what the noble Chairman seemed to say the other day, that the charge and the explanation are alike inexplicable, that is, so far as I am concerned.

(*Mr. Mellor.*) Mr. Pember, I assure you every member of the Commission, I think, agrees with you.

(*Mr. Pember.*) Quite so. The charge and the explanation are alike inexplicable.

(*Sir George Bruce.*) And when you have settled the explanation, it has no bearing whatever upon the question before us.

(*Mr. Pember.*) Not the slightest. At the same time, may I take leave to make one slight addition to what we are now all so happily agreeing to say—Mr. Gomme was kind enough to come over the other day, and I am sure he will not object to my saying what was said with regard, I think, to the Southwark and Vauxhall 40,000*l.*, that he withdrew all charge of illegality.

(*Mr. Gomme.*) I never made any such charge.

(*Mr. Pember.*) Then I said to him, "Will you make the same admission to me with regard to the others?" He said, "Yes." Now, if there was nothing illegal done, what are we wasting our time on?

(*Mr. Freeman.*) Now Mr. Gomme will meet Mr. Wilkins.

(*Chairman.*) You may meet any time that is convenient to you two gentlemen.

(*Mr. Pops.*) Where there is now a club. Walsingham House, I think.

27,472. (*Chairman.*) I believe your company met with great difficulties at first?—It did in its early experience.

27,473. Did you come to a standstill in 1739-40?—According to the records of the office it appears to be so.

27,474. Frost, I believe, had something to do with that?—Yes.

27,475. Your works were broken up by the frost?—They were.

27,476. Do you mean that mains were injured, or what was it?—Our plant chiefly, I think—the whole gear went wrong; it was broken up by the frost. The subject was not so well understood in the last century as it is now. We plume ourselves on being the first company that introduced filtering—we did that in the year 1829.

27,477. (*Mr. Mellor.*) Then the water up to 1829 was unfiltered?—Yes, it was purified merely by being deposited in storing tanks or reservoirs up to 1829.

27,478. (*Chairman.*) Where was your first filter bed?—At Thames Bank, Chelsea.

27,479. During all the early part of the century you were, I believe, under no obligation to supply water and under no restrictions as to charge?—That is so.

27,480. It was entirely a matter of agreement?—Quite so.

27,481. Did you obtain an Act in the year 1852?—We did.

27,482. Fixing your capital at 300,000*l.*?—Yes.

27,483. Giving you power to raise a further share capital of 270,000*l.*?—Yes.

27,484. And borrowing powers to the extent of 90,000*l.* in addition to the 80,000*l.* which you had already borrowed?—That is so.

27,485. Where was your intake at that date, in 1852?—At Thames Bank, Chelsea.

27,486. Was it?—Yes, near the Chelsea Hospital.

27,487. I thought it was at Seething Wells; is that the same thing?—It is so now; under our Act of 1852 we went to Seething Wells.

27,488. That is what I am asking you?—I beg your pardon.

27,489. Under your Act of 1852 you went to Seething Wells; were you prohibited then from taking

the water at Chelsea?—Under the Act of 1852 we were prohibited and went to Seething Wells.

27,490. And those works at Seething Wells you completed in the year 1856, I believe?—Yes.

27,491. (*Mr. Mellor.*) Did you do away with your works altogether on the Thames bank?—Altogether.

27,492. Where did they stand—immediately in front of the Chelsea hospital?—No, partly where the barracks are—near the present Grosvenor Road Station of the Chatham and Dover Railway.

27,493. (*Chairman.*) Your intake was near a place called Ranelagh Creek, was it not?—Yes, that is the name of the part.

27,494. You brought the water from Seething Wells across the Thames, did you not, at Putney Bridge?—Yes, I should mention at that time we had an aqueduct of our own which is now abolished. Our mains now cross the new Putney Bridge.

27,495. An aqueduct under the Thames, do you mean?—No, over a bridge—in fact an aqueduct bridge.

27,496. Where did that bridge stand?—At the side of Old Putney Bridge. It was on the site of the present Putney Bridge.

27,497. Your area of supply is entirely north of the Thames?—It is entirely north of the Thames, I believe.

27,498. Even in that area north of the Thames, have you ever had any competition?—Not within my memory; not since 1817.

27,499. Had there been competition before that?—Up to that time I take it it was so, but in 1817 a mutual arrangement was come to by the Chelsea, Grand Junction, New River, and West Middlesex Companies by which competition ceased, but there were no formal agreements entered into.

27,500. Nothing in writing?—Nothing.

27,501. No minute?—I will not say there was no minute, there may be an entry in our Minute Book of the understanding, but we have no written agreement. Our secretary informs me that there is a minute in the Minute Book that that understanding or arrangement was come to, but that there is no formal agreement.

27,502. You have not got that minute here, have you?—No.

(*Mr. Pember.*) I think you will find all the circumstances stated in a Blue Book of 1821.

(*Mr. George Henry Gill.*) It is practically as stated in the evidence of 1821.

(*Chairman.*) The agreement was stated in the evidence of 1821.

(*Mr. Gill.*) Yes, my Lord.

(*Mr. Hollams.*) It was all gone into by the House of Commons in that year.

27,503. (*Chairman.*) You got further capital powers in 1864 by an Act?—We did.

27,504. And in 1875 did you get power to get land at West Molesey?—We did for a fresh intake. We moved our intake higher up the Thames, from Seething Wells to West Molesey.

27,505. Then that Act, I suppose, authorised an intake?—It did so.

27,506. Did it authorise any subsiding reservoirs?—Yes, we bought 50 acres of land for subsiding reservoirs.

27,507. And engines, of course?—Yes, pumping engines.

27,508. Are your filter beds still at Seething Wells?—The filter beds still remain there.

27,509. You carry the water I suppose from West Molesey to Seething Wells?—We do.

27,510. You have since enlarged those works, and I do not know that we need go into the detail of that. You still get your water from West Molesey?—We do.

27,511. And filter it at Seething Wells?—Yes.

27,512. Have you got service reservoirs?—At Putney Heath we have got service reservoirs.

27,513. Have you recently raised the banks of your West Molesey reservoir?—They are in course of being raised. The contract time will expire in December next—at the end of this year.

27,514. What capacity will they have when they have been raised—how many gallons will they hold?—49 millions more. The present reservoirs have a capacity of 140 millions, and when we have raised them five feet they will have an additional capacity of 49 millions, making altogether 189 millions.

27,515. (*Major-General Scott.*) Will that represent about 13 days' storage of your supply?—About 15½ days on the average of last year.

27,516. (*Chairman.*) Are you also making an additional reservoir at Putney?—Yes.

27,517. What is the capacity of that reservoir?—11 millions, and the new one is of the same capacity.

27,518. Then you will have capacity for 22 million gallons at Putney?—When the new one is finished.

27,519. When will it be finished?—In the spring of next year the contract will expire.

27,520. That is a reservoir of filtered water as I understand?—Yes.

27,521. Whereas the other reservoirs you spoke of before are for unfiltered water?—Yes.

27,522. In 1896 you laid down a new main from Molesey to Surbiton, I believe?—We did so.

27,523. What was the object of that?—To improve our plant. We had one main previously, now we have two.

27,524. Why is Surbiton the terminus, what is there at Surbiton?—It is a part of Surbiton called Seething Wells, where our engine houses and plant are established.

27,525. It is a main therefore that carries water to be pumped up, is it to the filter beds?—It comes by gravitation from West Molesey to Seething Wells.

27,526. It is thrown directly on to the filter beds there, is it?—Yes.

27,527. At first you paid no dividends, I believe?—Not for the first 15 years.

27,528. When did you begin to pay a dividend?—We paid a dividend of about four per cent. from the years 1737 to 1740 inclusive. This, however, could not be maintained and nothing more was paid until 1753, when the company commenced paying a dividend amounting to about 1½ per cent., which sum was maintained until the year 1769. From 1769 to 1796 we paid a dividend of 1,600*l.* each year, slowly increasing to 2½ per cent. in 1853, and finally in 1890 we arrived at the maximum of 10 per cent.

27,529. So that it took you more than a century to get up to that maximum?—It did so.

27,530. When did you begin paying back dividends?—In 1895.

27,531. And how much have you paid altogether in back dividends?—10,256*l.* to September last.

27,532. How much is still due?—About 700,000*l.*, I think.

27,533. (*Mr. Rickards.*) Rather more?—It may be a little over 700,000*l.*, that is going back to 1852 only.

27,534. (*Chairman.*) That is the date when you first had your dividend fixed?—Yes.

27,535. I suppose you treat those back dividends, as a matter of right for your shareholders?—We do indeed, and at the present rate it will take us nearly 100 years to pay them off.

27,536. (*Mr. De Bock Porter.*) Then the consumer will not get much relief from your company in the near future?—That all depends upon whether the sinking fund clauses are to be imposed upon us. We have 50,000*l.* which we raised under the Act of 1896 in respect to which the sinking fund clauses will apply. We shall make the first payment in 1901, and that will be about 2,000*l.* a year. Possibly we may have to go to Parliament for more money to develop our works, and if the sinking fund clauses apply, then of course we shall raise the money on more onerous terms than we otherwise should do.

27,537. (*Chairman.*) You are hardly answering the learned Commissioner's question—you say it will take you a hundred years to pay off your back dividends?—Yes.

27,538. During that 100 years the consumer cannot look to any rebate in the charges?—What I mean is, that if the sinking fund clauses are imposed upon us,

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Mr. F. S. Clayton. we raise our money on more onerous terms than we otherwise should do.

27 Feb. '99 27,539. You mean that relief to the consumer may be postponed more than 100 years?—No, I do not say that.

(*Chairman.*) It must be 100 years, at any rate.

(*Mr. Rickards.*) It would come sooner but for the sinking fund clauses.

(*Witness.*) But for the sinking fund we should raise our debenture stock at, say, 2½ per cent. Now we raise it at double that rate, or more. If we raised it at only 2½ per cent., we should have more money for our ordinary stock dividend, and our ordinary stock dividend would therefore be at a higher rate, and we should be paying off our back dividends more quickly than we should otherwise do.

27,540. (*Mr. De Bock Porter.*) Is your 100 years estimate based upon the assumption that you do not pay into the sinking fund?—No.

27,541. You think that if you pay into the sinking fund, it will take a hundred years before you pay them off?—I will not say quite a hundred years, but thereabouts—if there is a sinking fund.

27,542. (*Chairman.*) Is there much vacant ground in your district?—About 400 acres only, in the Fulham part of the district.

27,543. Therefore there is no prospect of any very considerable increase?—No, there is not. In about 20 years' time, probably our district will be fully developed, and covered with houses; it is entirely in the Metropolitan district.

27,544. After those 20 years you will not be able to look for much increase in your income?—No, excepting that possibly the old houses in Chelsea may be pulled down, and larger ones rebuilt; and trade supplies are constantly increasing.

27,545. Have you at all estimated what number of houses you think in the 20 years may be built upon that part of Fulham?—About 8,000; that is about 20 to an acre.

27,546. What is your average cost of supply per house—have you got such an average?—Those would be small houses, judging by those in the neighbourhood, and they would be about 30l. houses. It would be 4 per cent., and no charge for high service or baths; it would not be a profitable part of our business.

27,547. That is about 1l. 2s. per house?—About 1l. 4s.

27,548. Yes, 1l. 4s., I beg your pardon—it would be two-tenths; therefore prospective income with you is not very likely?—About 10,000l. a year, I should think from those 400 acres. But then we find our income increases from other sources; larger houses are built in lieu of the smaller ones, and trade supplies are continually increasing.

27,549. They are built with baths, and with all sorts of appliances which increase the consumption of water?—They have to pay for those baths.

27,550. They pay a fixed sum?—Yes.

27,551. Do you find the baths pay you better than your percentage rate?—I am afraid I could not answer that question.

(*Mr. Rickards.*) The secretary, my Lord, has gone very carefully into those figures, I think, and he can answer those questions for us.

27,552. (*Chairman.*) Very well. We know that your powers are to take 20 million gallons from the Thames at West Molesey?—That is so.

27,553. And a further two millions under agreement with the Thames Conservancy?—Yes, that is so.

27,554. That makes 22 million gallons per day at West Molesey?—Yes.

(*Mr. Rickards.*) They have an unlimited supply at Seething Wells that they can obtain, my Lord, in case of emergency.

27,555. (*Chairman.*) Yes, in case of emergency, whereas you estimate that even when your district is full you will not need more than 17½ million gallons a day, I believe?—That is our idea; we feel convinced that we shall not require more than that.

27,556. Therefore you feel that you have got a margin?—A margin of 4½ millions.

27,557. And do not need any large expenditure in the future?—That is so.

27,558. You have once already alluded to the sinking fund clauses as being prejudicial to the consumer; what is your view of the sinking fund clauses as regards your company?—I think they are prejudicial to us in this sense, that but for the imposition of the sinking fund clauses, I think we should pay our back dividends more quickly. That is, we should raise our dividend more quickly than we do now, so that the present generation of proprietors would benefit in that way. At present we are paying one per cent. back dividend; if we paid 2 per cent., instead of taking 100 years probably it would take only 50 years to pay off the back dividends.

27,559. (*Mr. De Bock Porter.*) What does it take to pay 1 per cent. on your back dividends?—About 7,800l. a year for back dividends.

27,560. 7,800l. a year?—One per cent. on our capital—our ordinary stock.

27,561. (*Chairman.*) You dropped the expression just now that the sinking fund clauses obliged you to raise money at a higher rate of interest; I do not quite follow what you mean by that?—You see it is at a higher rate of interest. It is true we have 50,000l. which we raised under our last Act at 2½ per cent. debenture stock, but besides that we have to pay the sinking fund annual payment, and the two together, of course, is an increased amount per annum.

(*Mr. Mellor.*) That is a very different thing.

(*Mr. Pember.*) It is a metaphorical phrase.

(*Mr. Rickards.*) It comes to that, though.

27,562. (*Chairman.*) You do not pay more for your money to the lender?—No.

27,563. (*Mr. De Bock Porter.*) But you do not get so much profit for your shareholders?—But for that we should have more to pay dividends on the ordinary stock.

(*Mr. Pember.*) And therefore more to pay back dividends.

27,564. (*Chairman.*) Then you are not allowed on the debenture capital that you raise now to make a profit to your shareholders beyond the difference between your average dividend and the interest on the—?—That is so, and we shall not pay off our back dividends so quickly as we otherwise should do.

27,565. (*Mr. De Bock Porter.*) It makes the present value of your back dividends considerably less, does it not?—When you look forward to 100 years, I do not think that is very much considered in the value; I mean it does not make any appreciable difference in the value when there is 100 years to run. If we had only got ten years more to run, of course it would be an appreciable matter.

27,566. (*Chairman.*) I suppose you look upon these sinking fund clauses as unjust?—I do, indeed. It is an undue interference with us as a commercial company. We ought to be allowed subject to control from the Government to manage our own affairs in our own way, as other commercial companies are allowed to do.

27,567. And to raise as much money as you could contrive to spend at a profit of 10 per cent.?—Quite so.

27,568. That is all the sinking fund clauses do; they say, If you want to raise more money, you must not do it at those large profits you have hitherto enjoyed?—Excuse me, I do not call it profit.

27,569. What is it; what do you call it?—We should raise it on debentures at 2½ per cent. without that sinking fund clause, and the money which we pay for the sinking fund would go to our own proprietors to pay off the back dividends; then the public would come in—the consumers would come in.

27,570. But that is at a time so remote that you say it makes not much difference to them?—It would come more quickly if there was no sinking fund clause.

(*Mr. Pember.*) Do you know that that works out at 3,375l. a year? You see it is supposed to earn 10 per cent. on 50,000l. Very well, they raise it at 2l. 15s. They are allowed to retain 1 per cent. for management. That is 3l. 15s., and that leaves 6l. 5s., which is the difference between that and the 10l. for them to hand *Se* over. 6l. 5s. upon 50,000l. is 3,375l. a year; so that it 27, makes an enormous difference.

27,571. (*Chairman.*) Yes. I am afraid the tide, as far as water legislation is concerned, has turned against the shareholders?—I am afraid we are not very popular, I do not know why we should not be. We manage our concern very honestly, and to the best of our ability.

27,572. (*Mr Mellor.*) I do not quite understand you. Do you think that you ought to have statutory powers to collect that money, and then to manage your own affairs as you please?—Railway companies are enabled to do so, why not water companies?

27,573. Not altogether, there are certain statutory obligations upon railway companies which, I think, people are rather apt to forget?—We are subject to control.

27,574. I only want to know what your view is, that is all; you think that kind of control is sufficient?—I think so.

27,575. (*Mr. De Bock Porter.*) Have you any objection to a purchase based upon your present receivable income?—I should not be satisfied with that. I should want something for prospective profits.

27,576. Yes, but your prospective profits seem to be very small; your only prospective advantage is getting your back dividends, is it not?—Running over 100 years.

(*Chairman.*) That rather makes it less valuable.

27,577. (*Mr. De Bock Porter.*) It would be a very small addition, would it not, if it takes so long a time as that to pay it?—If the sinking fund clauses were omitted, the present generation of proprietors would receive more dividends, because the back dividends would, perhaps, be double, instead of 1 per cent. they would be 2 per cent.

27,578. (*Chairman.*) Unhappily the sinking fund clauses are enacted?—They are so.

(*Chairman.*) We must deal with things as we find them.

27,579. (*Mr. De Bock Porter.*) And you are only entitled to your back dividends as tempered by those sinking fund clauses?—That is so.

(*Mr. De Bock Porter.*) So it is a present advantage.

27,580. (*Chairman.*) There are not many traders who make 10 per cent. on their capital and back dividends beside?—You ought, I think, to look back to the early days of the company.

27,581. When you had a hard fight?—The company began in 1722, and we had a hard struggle, and now when we are, as it were, on the top of the tide, we are not to have the full benefit of our profits. It seems rather hard.

(*Chairman.*) It was not worth plucking you before.

(*Mr. Pember.*) I will say this, my Lord, you are a very genial advocate of confiscation.

27,582. (*Chairman.*) Not only have you got your 10 per cent. and your back dividends, but you have got statutory powers of levying your income, that is rather an unusual thing; you have got statutory powers by which you are enabled to levy and raise your income?—No doubt we have that power.

27,583. Those are advantages which are not given usually; you are not an ordinary trading company, are you?—In a sense, we are not; still, but for the private enterprise of these companies, London would be without water.

27,584. I need hardly ask you—you are against purchase by anybody, I suppose?—I am; and certainly by a changing body; for this reason: according to my experience of water directors, the first year or two, of course, they do not quite understand very much of their duties, and if the water authority should be subject to popular election, to be re-elected every 3 or 4 years, just when the members of that body begin to understand their business, they will go out of office and a new set come in. In such a gigantic affair as the metropolitan water supply, it seems to me that the public authority, if one is instituted, should be a permanent body, and not a changing body.

27,585. (*Mr. Mellor.*) But it is just possible that the same men might come in again?—But then, sir, do you think that legislation—

27,586. If they had performed their duty satisfactorily, surely the ratepayers would be indisposed to turn them out?—Let me put this case; suppose there should be

a public outcry against water rates of any kind, and a new body should be elected on the principle of free water, where would our 3 per cent. stock be unless we could fall back upon the rates? It is said that if we are purchased, a 3 per cent. stock is to be the purchase money of the companies. Free water means no water rates, and it is quite possible, because we have free education and free bridges; turnpikes have been abolished, and then we have free libraries, so why not free water? That might be an election cry.

(*Sir John Dorington.*) But somebody pays for the education, and somebody pays for the turnpikes.

(*Mr. Mellor.*) And somebody pays for the free library.

(*Witness.*) Yes. In the evidence given before the Commission by some of the other chairmen, I think I have heard a suggestion that we should be paid in 3 per cent. stock charged upon the water rates, if this public body should be elected on the principle of free water, I do not see the security for our 3 per cent. stock, if there are no water rates—unless the public body are bound, if they abolish water rates, to fall back upon the rates generally.

27,587. (*Chairman.*) In fact you would leave the providing of water for something between five and ten millions of people in private hands?—I would do so. I do not think the public are suffering particularly now we are promoting a Bill, the companies first and the Government afterwards, for interchange and intercommunication. It seems to me that as far as possible it is perfection.

27,588. (*Major-General Scott.*) Are you an advocate for that extension of control which is implied by those Bills?—I am quite willing to submit to it.

27,589. (*Chairman.*) To what extent? The control that you submit to under this Bill which is now before Parliament is a control imposing upon you the necessity of executing certain works?—I am quite willing to submit to it; in fact it is a joint Bill.

27,590. Are you willing to submit to that same sort of control in the whole of your undertaking—to a control, for instance, which would say to you, "Now, please, abandon all these intakes at West Molesey and go to Wales"?—Why, as I understand that interchange Bill, there is no such control as that imposed upon us.

27,591. You consent to execute any such works as the Local Government Board may direct?—With a view to interchange.

27,592. Very well. Would you say you would not object to the same sort of control applied to the whole of your undertaking?—Personally I should object, because we Chelsea people have nothing to do with it. We have got a margin of $4\frac{1}{2}$ millions of water, and it will not be necessary for us to look elsewhere for any additional source of supply. Under no circumstances would it affect the Chelsea Company. If we should be bound to federate for the purpose, then the Chelsea Company would fight hard to be indemnified against any cost and expense in the matter. It does not concern us in any way or shape.

27,593. Why do you consent to it?—For the purpose of presenting a united front. We thought it was better for all the companies to unite, and we did so.

27,594. You thought you must throw something to the wolves?—Your Lordship is pleased to put it so.

27,595. I see now how it is. Is there any control that you think might usefully be introduced in the interests of the consumer?—I confess that the control under which the companies already carry on, sufficiently protects the consumer. The public water examiner looks after us. Our accounts are examined by the public auditor and then, more than that, there is the Metropolis Water Act of 1897 which imposes a very considerable control upon us.

27,596. That has not been very oppressive hitherto; we hear that there has only been one case, which I think has been abandoned. I forget, really?—That only shows that practically it was a theoretical want.

(*Chairman.*) I am not quite sure of that, however.

27,597. (*Mr. Mellor.*) It may be that it was not a very practical remedy?—I suppose, that half the clamour against the water companies really has no foundation.

(*Chairman.*) I understand that that is a water director's view.

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Mr. F. S. Clayton. (Witness.) You see, in regard to the Act of 1897, the vestries or the parishes can assist any private individual in applying to the Railway Commissioners, so the question of expense does not arise.

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(*Chairman.*) You are a man of the world, and you must know that these long and difficult legal proceedings are not very practical as remedies, and that even public authorities may hesitate to embark in them. True, there is the police magistrate.

(*Mr. Littler.*) They can contribute to proceedings before the police magistrate, as well as before the Railway Commission.

27,598. (*Chairman.*) Yes, that is true, they can do that; but do you see any objection to a sort of administrative control—let us suppose, for instance, that the water examiner or any other public officer were empowered to hear a complaint, and go upon the spot and examine the works or the fittings or whatever it was, and remedy it at once by order; should you see any objection to that?—Not if it was a Government official.

27,599. I mean a Government official—a man who is clearly impartial?—I should not.

27,600. Instead of going to the Court, and having witnesses and counsel and all those expensive luxuries, could you not have a system by which some impartial Government official should investigate any complaint against a company, and decide it either for the complainant, or for the company at once, and on the spot?—That would be by way, I take it, of public inquiry in the ordinary way—a public inquiry under the Local Government Board.

27,601. I do not mean a public inquiry under the Local Government Board, I mean a competent man going to the house where the complaint arises, and investigating it then and there, and settling it off-hand?—I must be allowed to say, that depends upon circumstances. Suppose that public official should order us to execute further works to the tune of 100,000*l.* or 150,000*l.*, are we to be subject to such a control as that without having a voice in the matter? If it is of such serious importance, it should be a public inquiry.

27,602. (*Mr. H. W. Cripps.*) You are aware, of course, of the control which you are now under, under Acts of Parliament that have been passed for the purpose?—I am aware of it.

27,603. Having considered those, are you of opinion that no further control of that kind would be of any use?—That is my opinion.

27,604. You reject that altogether?—Yes.

27,605. (*Major-General Scott.*) Do you find that the local authorities take an interest in the water supply?—Very little.

27,606. (*Sir John Dorington.*) Since the passing of the Act of 1897, has there any case arisen, to your knowledge, before a police magistrate of proceedings under that Act?—Not with our company, certainly.

27,607. You do not know about other companies?—I cannot answer for them.

27,608. (*Major-General Scott.*) The local authorities have no trained executive in water affairs, have they?—I am not aware that they have. I have not heard of it.

27,609. Do you think that possibly their officers might find a difficulty in mastering the details of making a proper examination?—Very likely they would find great difficulty; it is a very complicated subject.

27,610. And they have no direct means of obtaining information, have they?—I am not aware that they have.

27,611. They certainly cannot claim any information from the companies, can they?—We are bound to send them information when we cut off supplies.

27,612. As a sanitary authority?—Under the Regulation of Powers Act.

27,613. (*Chairman.*) I do not know whether I made clear to you what was passing through my mind. I wanted to get your judgment upon this. Let me take a concrete case. Here is a man in the East of London, who says, I have got no water in my cistern; my tap does not run; very well. Supposing he could complain to some public officer, who was competent, who understood the subject thoroughly, and who would investigate the causes of that, he might find that it was

owing to drought. He might find that it was owing to frost, or to some cause that excused the company; he might find, on the other hand, that it was because the company did not maintain sufficient pressure in their mains when they might do so; do you not think that an investigation by a man of that sort, understanding his business, and doing it at once in an informal way upon the spot, would be more efficient and more satisfactory to both sides than a proceeding for penalties before a magistrate?—I cannot conceive that any of the companies would be so foolish or so ill-advised as to refuse to go into the matter, and tell the man the plain truth of what it was. We find in the complaints that come to us, that the fault rests with the consumer, not with us, in almost every case.

27,614. I assume that this public officer would be able to discover that. I am suggesting to you a different kind of control; that is an administrative control instead of a judicial control, and I want to elicit your opinion about that—you see what I mean?—I see what you mean.

27,615. Instead of exercising control by that roundabout process of suing a company for penalties before a magistrate, or taking them before the Railway Commission and having an enquiry which must depend upon the conflicting evidence of experts and the ingenuity of counsel, I am suggesting that you should have the control exercised by a competent public officer who should examine the complaint on the spot, and after hearing both sides say what ought to be done?—I should not object to a Government official.

27,616. I mean a Government official?—But, my Lord, do spare us from the interference of busybodies.

27,617. I am not suggesting that to you; I only want to get your opinion upon a different kind of control from what has been exercised hitherto. You have pointed out all these statutes, the statutes all necessitate what may be very valuable, I do not say it is not—namely criminal proceedings before a magistrate or proceedings before the Railway Commissioners, which involve, as I say, delay, cost and conflicting evidence, and all the somewhat over-elaborate machinery of the English law?—I should not at all object to a Government official taking up that duty, and having that control over us.

27,618. (*Sir George Bruce.*) At present if there is anything wrong with a man's cistern, and he cannot get water, does not he send to the nearest turncock, and get it examined at once?—He does so.

(*Mr. Mellor.*) The nearest turncock.

27,619. (*Sir George Bruce.*) Yes, the nearest turncock. (*To the witness.*) To come and see to it?—That is the case.

27,620. A turncock connected with the company that is supplying him?—Yes.

27,621. He would come and he would say whether it was the fault of the ball-cock not working, or something of that sort, and get it done at once?—Yes, that is the practical way of looking at it.

27,622. That is how it is done now?—That is how it is done.

27,623. And if you get imported a Government official into that, do you think it would work?—I suppose that the reference to the Government official would only take place when the consumer was dissatisfied—when we failed to satisfy him.

27,624. (*Chairman.*) The suggestion I was making, you know was that the Government official should be put in the place of the magistrate and of the criminal prosecution, which is the present system of control?—I should not object to that.

27,625. (*Mr. Mellor.*) And a Government official who should be easily accessible—that is one of the most important things?—Yes.

27,626. (*Sir George Bruce.*) How many Government officials would you want in London—you would want an army of them if you put them in place of the turncocks?—That is rather a difficult question to answer.

27,627. (*Chairman.*) Would you want an army of them? You say you have had no complaint at all in your company, therefore there would not be any trouble in Chelsea?—The complaints, as far as our company goes, are practically nominal.

27,628. (*Mr. Mellor.*) Take the working man who has to go to his work; how is he to find a turncock?—He

understands the rate collector, because he comes and leaves a notice which says, pay your rate to me, or pay it at my house at so and so; but how is he to find the nearest turncock?—In our case, our district is such a small one, and we have two depôts, the principal office, and another one at Fulham; and, besides, most working men know where the turncocks reside, as there is a brass plate on their doors.

(*Mr. Pember.*) I am told—I do not know how far it is the case with all the companies—that with some of the companies the addresses of the turncocks are on the back of the demand notes.

(*Mr. Claude Baggallay.*) They are also on the lamp-posts in some cases—they are in Chelsea, I think.

27,629. (*Major-General Scott.*) If the householder finds a difficulty in getting redress from the turncock or whoever it may be on these trivial matters, he can apply, can he not, to the sanitary inspector, who is the representative of the local authority?—Yes, he can do so of course.

27,630. The local authority now has a statutory right to intervene, has it not?—Yes, that is so.

27,631. (*Chairman.*) Yes, the local authority now has a right, but it is a right to prosecute, and before they prosecute they would probably lay a case before counsel for advice, and there would be a whole elaborate process to be gone through before the thing can ever be heard?—Yes, that would be so under that Act, but it really does not affect our company.

27,632. You are impeccable?—Our complaints are nominal. It is very often a case of a dirty cistern or a ball-cock fixed, or something trivial of that kind.

27,633. (*Major-General Scott.*) If the local authorities combine, and so far as a company's district is concerned form a water committee, that water committee under existing statutory enactments could intervene very effectively, could they not, in the case of anything irregular in the proceedings of a company with regard to their works?—They practically have that power under the Act of 1897, I think.

27,634. But, of course, now they are more or less a divided body, as in a company's district there are a large number of these authorities; but supposing that they combined and formed a water board or a water committee, do you not think they could intervene very effectively if anything went wrong?—I think the Government official would be better. These parish authorities are rather apt to magnify cases of complaints, and to act in a spirit of fussiness from a parochial point of view.

27,635. (*Chairman.*) Do they not act in the spirit of the consumer?—There is such a thing as making grievances.

27,636. (*Mr. Mellor.*) What are the duties of a turncock at the present time, since you have instituted constant supply, what is his duty?—In case of a fire their duties are very active; there are fewer of them, of course, than used to be, for the reason you have mentioned.

27,637. That would increase the difficulty of finding one if you wanted one, I suppose?—It would in a sparse district, but ours is such a densely inhabited district that their residences are really very close together.

27,638. Has he any other duties at the present time except in case of fire?—Yes, he is continually turning valves and examining cocks and plugs, and so on.

27,639. Where, in the houses or in the streets?—In the streets.

27,640. (*Chairman.*) Had you any trouble with the frost in your district?—Do you mean the frost of two or three years ago?

27,641. Yes?—Very slightly indeed; all our mains now are about 3 feet underground.

27,642. Do you mean to say you lowered your mains?—Only some few of them; everything that was frozen was lowered to 3 feet.

27,643. (*Sir George Bruce.*) Is that 3 feet from the top of the pipe to the surface?—Yes.

27,644. (*Sir John Dorington.*) Can you say what the number of turncocks is in your district now?—13 or 14.

27,645. Probably as numerous as the police stations in the district?—I should think more numerous than the police stations.

27,646. So that they cannot be very far off from any inhabitant?—No, certainly not in the Chelsea district.

27,647. (*Mr. Mellor.*) My difficulty is, how is anybody to find a turncock; if I wanted one, I do not know where to look for one; how ought you to get their names and addresses?—Their names and addresses are generally on the demand note.

27,648. Is that so in your case, I do not remember?—It is not so in our case. I understand it is done in some companies.

27,649. (*Sir John Dorington.*) Do not the police, as a matter of duty, know where the turncock is?—I take it the policeman would know, and the postman too.

27,650. Do the police, as part of their duty, know where the turncocks are?—Our secretary says that these complaints generally come to the head office or the district office at Fulham.

(*Chairman.*) I live in your district, and I have not the slightest idea where I could find a turncock.

(*Sir George Bruce.*) You have never needed him.

(*Mr. Mellor.*) I have once or twice.

(*Witness.*) He has out-of-door duties; he is very seldom at home.

(*Mr. Mellor.*) As I understand it, he is very seldom at home; I do not think I have seen one for many years in the part of London where I live, and I am one of your consumers.

(*Witness.*) His duties are, of course, out of doors all day.

(*Chairman.*) You must catch your turncock flying.

(*Mr. Pember.*) I think you must have seen him on one day in the year.

(*Mr. Pope.*) You have seen him on the day before Christmas in all probability.

(*Mr. Pember.*) Or the day after.

27,651. (*Chairman.*) Have you any view about amalgamation?—It is possible, of course, but I think it would be a very long and tedious business, and subject, of course, to an arbitration, which probably would take two or three years, or longer, to work out.

27,652. Do you think the water supply of London would be better managed if your companies were amalgamated?—I do not think so; I believe the one object of this Royal Commission is to legislate for the future. When the districts of the several companies are fully developed, which they would be in 30 or 50 years' time, imagine the enormous area to be managed for water supply. You would require a large number of managers. I look upon the directors as managing partners in the concern. You would want a large number of those managers told off to look after the different parts of the districts; and if there was an amalgamation, and the boards are considerably reduced, I doubt very much whether the machine would work properly. You see, directors are not apt to lean so much upon the permanent officials as public bodies do. I do not know that I am wrong in saying so, but it seems to me that we should pay more individual attention to the working of the concern than a public body would do, having a pecuniary interest in its welfare.

27,653. That is coming back to the old argument of private enterprise as against public management?—Yes.

27,654. I was wishing to elicit your opinion about an amalgamation of private enterprise: here are eight enterprises dealing with what is practically one community, and obliged to bring water, for instance, from a distance under the Thames to the East of London, instead of taking it from the nearest point?—It would be possible, of course, but the board of directors must not be too contracted; you would want a large board to manage such an enormous concern.

27,655. (*Mr. H. W. Cripps.*) What is the amount that you set aside for your direction—what do the directors get in your company?—2,000*l.* a year.

27,656. (*Chairman.*) They are paid by fees, I suppose—attendance fees?—By attendance fees.

27,657. (*Mr. H. W. Cripps.*) How many directors have you?—Nine.

27,658. (*Chairman.*) And they must be shareholders, of course?—Yes. We look upon those fees as temporal accidents of the position. My point is this, that we, as managing partners in the concern, have a pecuniary

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Mr. F. S. Clayton interest in that concern *quâ* shareholders; the directors' fees are beside the matter.

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(*Chairman.*) A mere flea bite.

27,659. (*Mr. H. W. Cripps.*) Can you tell me what two or three others have told me—taking an average of the last five years, say, what would be the costs that you have incurred in Parliamentary proceedings, or proceedings in any way connected with the water question?—We have been put to an enormous expense, comparatively speaking—a large expense I will say—in combating Bills of the London County Council from year to year.

27,660. That is just what I want to know; I think one or other told us that it would average a thousand a year in the last five years?—I think the secretary would be better able to answer the question.

27,661. Can you tell me whether yours would be that?—It would be quite a thousand a year.

27,662. I daresay you mean by "quite a thousand a year" that the average really is a good bit over a thousand a year?—Very likely it would be so. It might be over one year, and about that amount the next.

27,663. I put it at an average of five years?—Yes, I understand.

27,664. (*Chairman.*) You have had no year of peace for the last six or seven years, have you?—We have not, indeed.

27,665. (*Mr. H. W. Cripps.*) You gave us a very large amount just now with reference to the back dividends that you think you might claim; do you consider that you could claim back dividends up to the time of the establishment of your company?—That is a moot point.

(*Mr. H. W. Cripps.*) I ask you your opinion on that if you think it is a moot point, because what you have given us, you know, went back to the establishment of your company.

(*Chairman.*) No, he said up to 1852.

(*Mr. H. W. Cripps.*) Then I beg your pardon; I did not catch the year 1852.

Cross-examined by *Mr. FREEMAN.*

27,666. Just on that last point you were mentioning; can you tell me how many Bills of the London County Council you have opposed during the last five years?—I think there has been one or two per annum, has there not?

27,667. I suggest to you that the only one you have had to oppose during the last five years was the Bill of 1895?—I do not mean the County Council alone, but there are Royal Commissions, and we are continually warding off attacks.

27,668. Royal Commissions are a sacred subject which we will not trench upon?—There are attacks from the London County Council, and also from other quarters.

27,669. I am quite correct, am I not, in saying that, so far as the County Council is concerned, there was only the Bill of 1895?—I cannot charge my memory.

(*Mr. Rickards.*) The County Council opposed the Bill of 1896.

27,670. (*Mr. Freeman.*) Will you kindly not make an interruption—that is not what I am asking. (*To the witness.*) How many Bills have you introduced in the last five years?—As a company, one.

27,671. And you have taken part in other Bills, have you, with other companies?—I do not think we have done so.

27,672. (*Chairman.*) You did not join in the Staines Reservoir Scheme?—We have taken part this year in the joint Bill of the companies for inter-communication.

27,673. (*Mr. Freeman.*) So that when you say you have spent over 1,000*l.* a year in litigation, you do not mean merely in opposing Bills, but in opposing matters connected with the water question, Royal Commissions, and such like?—Yes.

27,674. Another matter; you mention that the local authority, so far as you are aware, take very little interest in the water question at the present time; was it brought to your notice that some time after November 1898 the Chelsea Vestry had a joint report from Dr. Louis Parkes and Dr. Rideal upon your water?—Yes.

27,675. You say that?—Yes; it was only in the newspapers, it was not brought to us officially.

27,676. That shows to us, does it not, that they take a considerable interest in the water if they had that long report by two doctors?—It did so.

27,677. I daresay it was brought to your knowledge that the medical officer and the analyst of the Chelsea Vestry were complaining strongly of your water?—There were four or five lines in the newspaper to that effect, but there was no official intimation to the company on the subject.

27,678. Did you ask to see the report?—Why should we?

27,679. That is hardly the question. Did you?—No.

27,680. I understand you to say that one of the objections which you bring to being purchased would be that if the rates were reduced or taken away, the securities for your annuity would go?—If our annuity was charged upon the water rates, that would be the result.

27,681. Of course you are aware that in the only Bills which have been introduced to deal with the companies the proposal was to buy with a payment of a lump sum?—Quite so.

27,682. If that was done, of course it would not matter an atom about what happened to the rates afterwards?—Not at all, I was referring to Mr. Banbury's scheme of 3 per cent stock.

27,683. So I gathered; I am sure you are aware that in anything that has been formally introduced in a Bill, the proposal has always been purchase by a lump sum?—Quite so.

27,684. And that is the usual way, you are aware, no doubt, in which water companies are purchased?—I believe it is.

27,685. Keeping to the order in which you refer to the matters, you told his Lordship that you thought there would be a considerable extension of your district in Fulham?—I did.

27,686. It is the fact, is it not, that that part of Fulham which you are speaking about is within the area of supply of the West Middlesex Company as well as of your company?—I am not aware of that. We are supplying under the arrangement made with the different companies in 1817, and we are acting upon that.

27,687. Would you mind following me just step by step. It is the fact, is it not, that the West Middlesex Company, together with your company, has powers to supply in that district?—That is so.

27,688. And you say that the only reason why you would be entitled to supply there, and the West Middlesex would not, is because you have made an arrangement in the year 1817?—That is so.

27,689. Can you tell us at all, in words, what that arrangement was?—It was a perfectly verbal arrangement.

27,690. Very mysterious these arrangements must have been, as nobody can have put them into words—cannot you tell us what it was?—It has been acted upon since 1817 that we should supply a certain part of the district, and our friends—the West Middlesex—should supply another part.

27,691. Have you yourself ever seen any note of that arrangement?—I have not, personally.

27,692. Do you know whether it exists?—I know it is acted upon, as a matter of fact.

27,693. Forgive me, that is not the question. Do you know whether there is any note of that arrangement existing?—There is nothing in writing beyond our minute book.

27,694. Then it is merely a tradition of the company, handed down from chairman to chairman, is not that so?—That is so.

(*Sir John Dorington.*) He says there is a minute in the minute book.

(*Mr. Freeman.*) Now he says there is none.

(*Witness.*) There is a minute in our book confirming the arrangement, which arrangement was not the subject of a written agreement.

(*Mr. Littler.*) It is all set out in the report of 1821, you know.

27,695. (*Mr. Freeman.*) I notice you say that it was an arrangement made with your friends, the West Middlesex. I suppose if they competed with you, they probably would not be quite such friends?—We have full confidence in their honour and sense of justice.

27,696. I daresay you are aware that they are actually prohibited from parting with their rights to compete; were you aware of that?—I was not aware of it personally.

27,697. There is something, you see—?—The secretary has reminded me that, in 1817, there was a meeting of the chairmen and two directors of each company.

(*Chairman.*) If my memory is correct, they are prohibited from selling their right to supply, but they are not prohibited from abstaining from the exercising of their right of supply.

27,698. (*Mr. Freeman.*) That is perfectly so. I thought I put it in that way; if I did not, I am sorry. (*To the witness.*) You say there was a meeting of chairmen, you understand, in 1817?—Of the chairmen and two directors.

(*Mr. Freeman.*) I see that was, in fact, told you by the secretary; that may be only in the secretary's knowledge of some minute in the minute books, and I daresay we shall be allowed to see that minute at some time. Have you it here?

(*Mr. Gill.*) No.

27,699. (*Mr. Freeman.*) I daresay you will be able to get it for us. I want to ask you a question about another matter: You referred to the back dividend, which, you know, has been paid. Can you tell me how much back dividend you have actually paid during the last four years—may I suggest a figure to you, to save trouble—10,256*l.*?—Yes, up to September, last.

27,700. That would be over a period of four years, I think, would it not?—Yes, it would be so for four years, and we have increased the rate in declaring the dividend in January of this year.

27,701. Therefore, at that rate, probably your estimate of about 100 years will not be far wrong?—Not at the present increased rate.

27,702. I understand you to say, that when you paid into the sinking fund, it would be upon your last issue of 50,000*l.* and you would pay about 2,000*l.* a year—did you not say that?—Yes, about 2,000*l.*

27,703. Can you give us any calculation how long that payment will postpone your hundred years payment of back dividends—have you any calculation on that?—When I said a hundred years, I took that into account.

27,704. Supposing you had not to pay anything to the sinking fund, how many years would you take to pay off your back dividends?—Probably 50 years, instead of 100.

27,705. You think it would make that difference?—Yes.

27,706. Have you made that calculation?—A rough calculation only.

27,707. A calculation was put in by my friend, Mr. Pember, showing what difference the sinking fund payments would make to you. He put it that you would have been able to raise the money at 2½ per cent., that there would have been 1 per cent. for management, making 3½ per cent. as against the 10 per cent. which you would be entitled to pay; as a matter of fact, what you have to compare it with is not the 10 per cent., is it, but the average of what you are paying, both on your shares and your debentures?—It is so; and on our preference stock.

27,708. So that, of course, it is not near such a high figure as 10 per cent.?—No.

27,709. It is a lower figure adjusted by that?—Yes.

(*Mr. Pember.*) I was wrong, I forgot.

(*Mr. Freeman.*) It is just to get it right on the notes.

(*Mr. Pember.*) You are quite right.

27,710. (*Mr. Freeman.*) You told my Lord, at the beginning of your evidence, various facts about your ancient history. I only want to ask you one question upon it, because you, no doubt, are well up in it. It is the fact, is it not, that in 1804, you were supplying in St. Luke's, Chelsea; St. Margaret's; St. John's; St. James'; St. George, Hanover Square; St. Mary,

Kensington; St. Martin-in-the-Fields; and St. Marylebone—I am taking it from the evidence which you gave in 1821, so it is, no doubt, correct?—That is, no doubt, correct.

(*Mr. Pope.*) It was given on behalf of the company, I suppose, you mean, not by this witness.

27,711. (*Mr. Freeman.*) That is what you were doing in 1804; in 1806, was the West Middlesex for the first time authorised to supply in St. Luke's Chelsea, St. Margaret's Westminster, and St. Mary Abbott's, Kensington, being three of the places which you were then supplying?—I could not say.

(*Mr. Freeman.*) It is upon the Act; I only wanted just to get it shortly from you, if we could.

(*Mr. Pope.*) If it is recited in a parliamentary enactment, you know you do not need to get it from anybody.

27,712. (*Mr. Freeman.*) Then in the year 1809, I think, you were supplying both St. Marylebone and Paddington, and the next year the West Middlesex were authorised for the first time to supply those two places?—That is so.

27,713. So that the historical fact is that the West Middlesex were introduced as a competing company into four or five districts which you were actually supplying yourselves?—Three.

27,714. Forgive me, more than three?—Previous to 1817?

27,715. If you please; and then in 1817, as you say, the dividing arrangement was made between them?—That is so.

27,716. I think, as a matter of fact, you rather said you thought a municipal authority or county council or any body of that sort would not be as good administrators as the directors of water companies?—That is my opinion.

27,717. I think almost the last time you had to select a new colleague, you selected a member of the County Council, did you not?—He was not a member of the County Council when we elected him.

27,718. At any rate he is in both capacities now, is he not?—He is so.

27,719. And I hope a very effective director?—He is a very effective director.

Re-examined by Mr. RICKARDS.

27,720. Is that Sir Harry Poland?—Yes.

27,721. You have been asked about the expenses your company has been put to on account of the opposition of the London County Council; they opposed your Bill of 1896, did they not?—They did.

27,722. That was the Bill for duplicating your main between West Molesey and Surbiton?—It was so.

27,723. With regard to the quality of the water, have the reports of Sir Edward Frankland and Sir William Crookes and Professor Dewar continued satisfactory?—Uniformly good.

27,724. With regard to this very early history of 1804, 1806, and so on; in 1817 you came to this arrangement with the West Middlesex Company?—Yes.

27,725. And in 1852 provisions were inserted in both your Acts to the effect that you were not bound to supply in any part of the district already supplied by another company?—That was so.

27,726. So that that to a great extent countenanced, at any rate, the arrangement you had already come to with the West Middlesex?—Yes, it did so.

Witness withdrew.

(*Mr. Rickards.*) Would you allow me, my Lord, to read to you the clauses in the Metropolis Water Act of 1852 with reference to a complaint by consumers as to quality or quantity of water, because I think, perhaps, they have been lost sight of?

(*Chairman.*) I think we have had them three or four times. I do not want them again upon the notes.

(*Mr. Freeman.*) On that question of the 1896 Bill, which, they say, the County Council opposed, it was proposed to bring in a clause, which is now practically section 12, prohibiting them from taking water from Seething Wells, and it was an opposition in consequence of the Local Government Board report upon that subject.

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- 27 Feb. '99 (Mr. Rickards.) And the sinking fund clauses ?
 (Mr. Freeman.) Yes, and the sinking fund clauses.
 (Mr. Rickards.) Your Lordship does not wish me to give them ?
 (Chairman.) No, I think not.
 (Mr. Rickards.) They are sections 9 to 13 of the Act of 1852, and section 35 of the Metropolis Water Act of 1871.
 (Chairman.) Those are the sections giving powers to prosecute.
 (Mr. Rickards.) Yes, my Lord. On persons making a complaint, the Board of Trade can appoint a competent person to inquire into it, and then, if the person appointed to inquire, reports that there is a cause of complaint against the company, the Board of Trade, that is, the Local Government Board now, may make an order on the company to carry out and remove the cause of complaint.
 (Chairman.) Do you mean to say that the sort of administrative control that I was suggesting already exists.
 (Mr. Rickards.) It already exists; the only thing is, that under the Act of 1852, 20 inhabitants must sign a memorial to the Board of Trade, but that is only as regards quantity; as regards the quality, the Board of Trade may, on their own initiative, appoint, without

the petition of the 20 inhabitants, a special person to inquire into the cause.

(Chairman.) As always, I was expressing no opinion, I was only seeking for the advice of a competent practical man as to whether one could simplify the system of control.

(Mr. Rickards.) I quite understand, I only wanted to call the attention of the Commission to this matter.

(Chairman.) Thank you.

(Mr. Mellor.) As I understand you, in the Act you referred to just now, the companies were relieved from the obligation of supplying any districts which were already supplied.

(Mr. Rickards.) By another company, yes.

(Mr. Mellor.) But there was nothing in the Act restraining them from supplying.

(Mr. Rickards.) No, but they had come to an arrangement, and, of course, that was passed in full knowledge of the fact that they had come to an arrangement not to supply in one another's districts—not to compete.

(Chairman.) As I understand, that arrangement is not in writing, and you could not get an injunction upon that if either of the companies, I mean, broke faith, there would be nothing to stop them starting in competition.

(Mr. Rickards.) No, I suppose not, but it would not be in the interests of the companies to break faith.

Mr. G. H. Gill.

Mr. GEORGE HENRY GILL called and examined.

27,727. (Chairman.) You are the secretary of the Chelsea Company, I believe ?—Yes.

27,728. How long have you been secretary ?—About 13 years.

27,729. You were in the company's service before that ?—Yes, I have been in the company's service for 27 years altogether.

27,730. Will you now put in the financial return of your company ?—Yes.

(The witness handed in Return. See Appendix P, 1.)

27,731. Will you also put in the return as to the works and supply of your company ?—Yes.

(The witness handed in Return. See Appendix P, 2.)

27,732. That return contains a description of your works ?—Yes.

27,733. And particulars as to your supply ?—Yes.

27,734. Do you also put in a return showing the distribution of the capital expenditure of the company ?—Yes.

(The witness handed in Return. See Appendix P, 3.)

27,735. And a return showing the number of supplies, the estimated population supplied, and the rateable value of the properties supplied by the company ?—Yes.

(The witness handed in Return. See Appendix P, 4.)

27,736. Also your letters estimating the future capital expenditure of the company up to the year 1937 ?—Yes.

(The witness handed in estimates. See Appendix P, 5.)

27,737. I will take the last first, namely, your estimates of future capital expenditure. You estimate that your company will only require to spend 300,000*l.* in order to meet the wants of their district up to the year 1937 ?—That is so, my Lord, except that that figure is amended to 350,000*l.*

27,738. Of course that must be based upon some estimate of the population you will have to supply in 1937 ?—Yes, that has been based upon that.

27,739. What do you take as the population that you will have to supply in 1937 ?—354,819 persons.

27,740. How do you get that figure ?—We have corrected the population of our district down to the year 1896 from the census of 1896—the census made under the Equalisation of Rates Act—we have carried that on to Michaelmas 1898, and we find that gives us 292,000 persons. I may say that the table of Mr. Gomme, which was referred to the other day—

27,741. Do not go into Mr. Gomme's tables ?—That has been handed to me allocating our population; according to that 1896 census, I almost entirely agree with that. In fact, in some parishes, I am within a very few.

27,742. Then you say, by the census of 1896, you find 292,000 people in your district ?—Yes, taking it to Michaelmas last on the same basis.

27,743. What do you mean by, on the same basis ?—The number of supplies laid on since the 1896 census.

27,744. What did the census of 1896 give; do let us go by steps ?—That gives us 292,000 persons at the present date.

27,745. What did it give you then ?—About 279,000.

27,746. How have you increased that ? I want to follow the steps of your process ?—We have taken the number of houses—the number of supplies laid on since that.

27,747. How many are there ?—I am afraid I have not that figure here.

27,748. Then you have a certain number of supplies that you do not know laid on since, and you have multiplied that by a certain number ?—I have taken a certain multiplier.

27,749. What multiplier ?—7·75, that being the average of the different parishes. You see, this census is made out in parishes and wards of parishes, so that we can tell exactly the number of supplies we have.

27,750. Do you mean 7·75 is the multiplier that you deduce from the 279,000 inhabitants given by the census ?—Yes.

27,751. Dividing the 279,000 persons given by the census by the number of supplies, you get a quotient of 7·75 ?—Yes.

27,752. Is that right ? Do not say, yes, if it is not ?—That is the general average. Each parish has been taken separately to arrive at that general average. You see, it is quite a different multiplier in every parish. We have had to take each parish separately to arrive at the general average of our district.

27,753. In that way you increase the 279,000 inhabitants to the figure of 292,000 up to September last ?—Yes.

27,754. Up to September, 1898 ?—Yes.

27,755. How do you calculate what the increase will be from September 1898 up to the year 1937 ?—We have only 400 acres of land unbuilt on in our district, that is entirely in the parish of Fulham; and we find that we can have possibly 8000 more houses built on that land. At the time of Lord Balfour's Commission we had 500 acres uncovered in the same way, 100 acres of which have been built upon since. I estimated at that time we might have 20 houses per acre built. It has turned out to be between 17 and 18, so that we then rather over-estimated the number of houses to be built per acre. We find that we may have 8000 houses built and we take each of those houses at 7·75 per house, and so arrive at our population of 354,819.

27,756. 8000 multiplied by 7·75 will give you what increase ?—62,000 persons increase.

27,757. According to the mode in which you get at your calculation that is not only up to 1937, but up to infinity?—Yes.

27,758. (*Mr. Mellor.*) Unless houses are pulled down and bigger ones built?—We find the tendency of that is not to increase the population at all events.

27,759. But suppose you built higher houses?—Yes, seven or eight houses come down and one large house is built in their place.

27,760. Take flats, for instance?—Yes.

27,761. (*Chairman.*) Surely you get more people in a large mass of flats than in the two or three small houses that existed there before the flats?—Yes, that may be so in the case of flats, but then you must take the other part of our district in which it has been going on in another way—Chelsea—where seven or eight houses have been pulled down and one moderate sized house built in place of them.

27,762. (*Mr. Mellor.*) In place of seven or eight?—Yes, in some cases certainly.

(*Mr. Littler.*) Take Pont Street.

(*Mr. Pember.*) Those flats occupy a very large area.

(*Witness.*) In Chelsea, where Pont Street is, as the learned counsel said, Cadogan Square and all that district was covered with very small houses, and we have found that the population has not been increased from the cause. Of course it has been increased in Westminster here, where the flats have been built.

27,763. (*Chairman.*) Have you at all tested what your population in 1937 will be if you took the population in 1891 and applied Lord Balfour's figure of 18·2 for the decennial increase?—Yes, I have.

27,764. What does that work out to?—That would give us 537,351 persons.

27,765. That is an enormous difference—537,351?—Yes. May I show you what that would mean?

27,766. (*Mr. De Bock Porter.*) You have not the area to put them on have you?—Exactly, that is so. And may I show you what that would mean. That would mean a density of 11·79 persons per supply throughout our district. If such a thing could happen it would either mean that the 8000 new houses must contain 31 persons per house, or that the density, taken over the whole of our district, must be nearly 12 persons per house. Such a thing I believe is unknown.

27,767. (*Chairman.*) Can you tell me what the rate of increase of your population in Chelsea was between 1881 and 1891?—Yes. That taken on the Water Examiner's figures is 13·01. That would be our proportion of the 18·2 I take it your Lordship means.

27,768. That is exactly what I want to get at. In your district you were considerably below the average of 18·2?—Yes, and that has sunk very much since.

27,769. (*Major-General Scott.*) And that 13·01 would give you about 478,000 persons?—I make it 451,295—13·6.

27,770. 13·6 is not your decimal?—No, 13·01 is mine.

27,771. (*Mr. Mellor.*) Do you supply that part of London near Ashley Gardens?—Yes.

27,772. There is a considerable amount of land unbuilt upon there, is there not?—Not much now. There are flats.

27,773. Whatever it is, have you taken it into your consideration?—Yes.

27,774. (*Mr. De Bock Porter.*) The only area that you have of any size is that south of Wormwood Scrubbs?—No, that is not in our district. Our district is South Fulham; that is the only part where we have any space except the small area at Millbank, which the County Council are building upon.

27,775. (*Major-General Scott.*) Of course, your position is quite exceptional compared with the other companies?—Quite exceptional. You see we are entirely within the Metropolis. We are surrounded by other companies and the river, and we have only this 400 acres that can be built upon.

27,776. (*Chairman.*) Your figure comes out extraordinarily small. I see you have given us your estimated population in 1937 as 354,819 persons?—Yes.

27,777. As against 537,351 which would be the figure upon Lord Balfour's average decennial increase?—Yes.

27,778. And 451,295 which would be the increase upon your proportion on that decennial increase?—Yes.

27,779. So that if you are right at all, it must be that you are in quite an exceptional position?—We are, from that circumstance that we have only that 400 acres uncovered.

27,780. What did you estimate your population before Lord Balfour's Commission?—375,000 for the future.

27,781. Yes, but I mean the population in 1937?—Yes, 375,000. We find there have not been so many houses built to the acre as we calculated on, and we think we have revised our population on the 1896 Census now correctly.

27,782. You estimated this upon the footing of 20 houses to the acre?—Yes 20 houses to the acre.

27,783. You have found, in fact, only 17 or 18 have been built to the acre?—Between 17 and 18.

27,784. That only makes a difference per acre of three houses, or 23½ persons per acre, does it. It makes a difference of three houses less, and 7·75 persons per house, or 23½ persons per acre fewer?—Yes. But then you must multiply that by 500.

27,785. Yes, but per acre it is only 23 persons; that is the difference?—Yes.

27,786. And then you multiply that by 500?—I see it was put down at 523 acres then—which is a trifle more—it would be between 11,000 and 12,000 persons.

27,787. That will not make up the difference?—No, that will not quite.

27,788. Where have you pared down your estimate?—You see we have corrected our population now by this 1896 Census which we think for our district is the most reliable source as we are entirely within the Metropolis, and as that Census is made out in parishes, and wards of parishes. Of course, we started with too large a population then; that has since been corrected. Our population was then too high, it had been returned too high we know.

27,789. For this number of persons that you have now cut down to 354,819, do you say you will only want to spend 350,000?—Yes.

27,790. How do you distribute that?—I may say that that expenditure would provide for a considerably larger population than that—very considerably larger. We allocate it in this way:—Completion of piping into the new Fulham district, 17,000*l.*; ordinary expenditure in the district on meters, &c., 30,000*l.*; extension of district mains, 10,000*l.*; reservoirs at Putney, and additional main-power from Putney to Surbiton, 97,000*l.*; additional pumping-power at Surbiton, 20,000*l.*; additional filters at Surbiton, 25,000*l.*; additional storage, 151,000*l.*, which includes raising the banks of the present reservoirs at Molesey.

27,791. Is that additional storage calculated upon the conditions of the year 1898, or upon what conditions?—No, because we say that we shall never exceed our present statutory quantity from the Thames. We shall never get up to it. No company has been put under such conditions for their existing supply.

27,792. How many gallons do you allow for your 354,819 persons?—What do you take them at? How many gallons per head?—That storage would give them, practically, 50 gallons a head.

27,793. I am not upon storage; what will your supply be for your 354,819 persons?—17½ million gallons would be 50 gallons per head, just upon, which shows that this estimate is absurdly large. It would give them 50 gallons per head.

27,794. 17½ million gallons a day would give them 50 gallons per head per day?—Yes.

27,795. That, of course, is going much further than Lord Balfour's Commission thought necessary?—At 35 gallons they would require 12,418,000, and at 44½ gallons, which is the highest figure appearing in the Water Examiner's reports—that is for the year 1897—15,789,000 would be required, as an average.

27,796. What did you distribute in 1898 actually—what was your highest? Give me your average for the year, and your average for the highest month, and your average for the highest week, if you have got it—

Mr. G. H. Gill.

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Mr. G. H. Gill. (Mr. Richards.) It is in the Local Government Board Report.

27 Feb. '99 (Chairman.) It is in the Water Examiner's Report, is it?

(Mr. Richards.) Yes.

(Chairman.) Perhaps you will get these figures for us when we return.

(After a short adjournment.)

27,797. (Chairman.) You were going to give me some figures?—Yes, I think your Lordship asked for the daily supply of the maximum month in the year 1893.

27,798. Yes, that is what I was asking?—The average daily supply in the year 1898 was 12,079,000 gallons, and the average daily supply in the maximum month was 13,225,000 gallons. I do not know whether your Lordship wants the minimum month.

27,799. No, I do not; the maximum is enough. I wanted to see how far you were below what you were estimating for your future needs in 1937. Then, your company is in a position, certainly, of comparative safety as compared with all the other companies?—Yes, we think so.

27,800. Without further powers, you can supply all your wants for the next 40 years?—Yes, and have a margin of $4\frac{1}{2}$ millions, we estimate.

27,801. (Major-General Scott.) Have you made any estimate with regard to the additional expenditure that would be required if you were placed under conditions as to storage similar to those of the Staines Reservoirs?—I have not gone closely into it, but I believe that the $17\frac{1}{2}$ millions storage for that would cover everything except taking the basis of 200 millions over Teddington Weir in the year. At 100 millions, we should have ample storage, and if you take the year 1893, we should have more.

27,802. I do not quite follow that. Assuming that you were under the obligation not to take water from the Thames whenever the flow of the river was 200 millions, or less, what additional expenditure would that drive you to in providing for storage reservoirs?—On the basis of the year 1893?

27,803. Yes?—That I cannot say.

27,804. (Chairman.) You see, I am bound to tell you frankly that, in my view, Lord Balfour's Commission does intend that storage shall be supplied for your existing supply as well as for any possible future supply?—Yes.

(Mr. Pember.) All the estimates for the total supply of London that we have given are based upon that idea.

(Chairman.) No, because I understand Mr. Gill to say he has never calculated —

(Mr. Pember.) I said for the total supply of London, I mean Mr. Middleton and Mr. Hunter's estimates.

(Chairman.) Yes, Mr. Middleton's and Mr. Hunter's are. These separate estimates from the companies I have not yet cast up. Of course, they ought to come only to a fraction or two apart from Mr. Middleton's estimate.

27,805. (Major-General Scott.) How would that future supply, which is provided for, work out per million gallons supplied. Have you made that out at all?—Storage, do you mean?

27,806. The cost of supply. Perhaps I had better refer you to the table in Mr. Lass's compilation. I believe he is fairly accurate in his statements. I refer to the table on page 9 of the return for December 31st 1897 and March 31st 1898. You see that your company is returned as incurring an expenditure of 292'49l. for every million gallons supplied?—Yes.

27,807. And I observe it is the highest rate of all the companies?—Yes, that would be so, because you see we have had to remove our works twice.

27,808. Without going into that, have you at all worked out the rate at which your future supply would stand on the basis of per million gallons supplied?—No, I have not.

27,809. You see, unless something is said to account in some way or another for the incidence of this capital, one is inclined to assume that if it has cost so much to supply per million gallons in the past, it ought to cost something like that to supply

in the future, unless it is accounted for in some way. Looking at the matter broadly, one is inclined to ask oneself the question, why should the company be enabled to supply at a lower rate per million gallons in the future than in the past? I want to know if that account has been made out?—No, it has not been made out. We have made out no such account as that. But you see we have all our plant—

(Sir George Bruce.) You see here the expenditure is put at 350,000l.; how many million gallons is that to provide, do you expect?

(Mr. Pember.) 4,710,000, because his average for this year was 12,079,000 a day. He says he will have to provide $17\frac{1}{2}$ millions, take one from the other, and that leaves 4,710,000.

(Mr. Richards.) No, he does not admit the $17\frac{1}{2}$ millions.

(Witness.) No, I do not admit that.

(Mr. Pember.) That is what he looks forward to; that is what he will provide.

(Sir George Bruce.) Provide that with an expenditure of 350,000l.

(Mr. Pember.) Yes, and if you look, you will see that works out at something under 70,000l. per million, and it must be remembered that a lot of his work is done.

27,810. (Major-General Scott.) This table is made up on per million gallons supply, totalling up the whole supply for the year, and dividing the expenditure by that amount in millions?—Yes.

(Sir George Bruce.) The capital expenditure.

27,811. (Major-General Scott.) You have not done it in that way?—No, I have not.

(Chairman.) That covers a lot of other items, maintenance, management, all of which are not included.

(Major-General Scott.) That is all brought in.

(Chairman.) Yes, in Lass's table, but it is not included in his item of 350,000l.

(Mr. Pope.) I think Major-General Scott got that from the witness, when he first put the question of 292l. per million gallons. He said it was a large figure because it did not include merely the works at present in use, but the works which had by legislation and otherwise become inoperative, because that was the whole capital expenditure whether available for the present purposes of distribution or not.

(Major-General Scott.) That is quite an argument that may be brought forward.

(Mr. Pope.) And I understood that is what the witness's answer to you was.

(Major-General Scott.) That is what one wants to understand. One wants to have it.

27,812. (Mr. Pope.) Quite so. But having caught it from the witness, I thought it was not irregular to suggest it again to see whether we were right or not in that explanation. (To the Witness.) Is that so?—I really do not quite follow you.

27,813. (Mr. Pope.) Do not you follow what General Scott's point is, that in the past there is a figure of 292l. per million gallons supplied, which represents the capital per million gallons supplied?—Yes.

27,814. Now, does that represent the capital actually available, or the two capitals which have been necessarily expended by your company, by reason of their having had two sets of works to construct?—That means the capital since the Act of 1852.

27,815. (Chairman.) Since when there have been no new works constructed?—Yes, we had to remove our intake in 1852 to Seething Wells, and then to further remove it to Molesey in 1874.

(Mr. Pope.) That is exactly what was in my mind.

27,816. (Major-General Scott.) Then in your opinion, it is not fair to contrast this expenditure of 292'49l. per million gallons in the past with the expenditure in the future?—Not at all.

(Chairman.) Then you let in the County Council argument about obsolete works and obsolete capital.

(Mr. Pope.) No doubt.

27,817. (Chairman.) You cannot have it both ways. (To the Witness.) Now, with regard to the supply per head; you have found the average supply per head

increasing, have you not, of late?—It has very largely increased in the last seven years.

27,818. How do you account for that?—Almost entirely from the fact that we have been bringing our district under constant supply. We began in the beginning of 1892, I think, and during that time our ordinary waste inspection has been allowed to lapse practically; our house to house waste inspection has been given up; our inspectors having been employed in looking after the fittings in the sub-district that was about to be brought under constant supply. That has now been completed, and we are now vigorously prosecuting our waste inspection, and we are going in very much more largely for the system of Deacon's waste water meters.

27,819. What is that system—I do not know it?—You take a small district. I may say I have prepared a table which will illustrate the point.

27,820. You shall put in the table in a moment, but will you first, in words, explain to me what the system is. You take a small district; what then?—We take a small district and apply one of these waste water meters to it. The whole of the supply to that district goes through that particular meter, and a clock runs in that meter, and there is a diagram attached, and it automatically registers the supply from hour to hour throughout the 24 hours. You can see exactly what is going through. Then our staff of waste inspectors go out at night, between 12 midnight and 4 o'clock in the morning, I think it is, when there is really supposed to be no legitimate use of water going on, and they listen at the stopcocks of the houses and endeavour to find out where water is running. Where they find water running, they make a note of the house in their book, and inspect it the next day. It really avoids house-to-house inspection.

27,821. What is the result; how has that water been running, what has been the cause?—Then they find that the fittings are really out of order, or there may have been legitimate use of water. It is explained to them in the house on that particular occasion.

27,822. Do you mean that there are any number of houses where, for instance, a tap is always running?—There is not a tap always running, but I mean the tap is running to waste.

27,823. (Sir John Dorington.) From accident?—From accident and waste; I mean the washer is out of order.

27,824. (Chairman.) And therefore there is dripping from the tap?—Yes.

27,825. Does that amount to anything sensible in the course of the day?—It is enormous.

27,826. (Mr. Rickards.) You will see in the table Mr. Gill proposes to put in we show the reduction?—In these districts; these are all in Fulham.

27,827. (Chairman.) You say these districts. Will you put that table in then, now?—Yes.

(The witness handed in Table. See Appendix P, 6.)

27,828. Explain what the table is?—It is to show the quantity of water taken in that part of Fulham where we usually get our increased number of supplies, and the houses we think will be about the same class as they are at present; and we find there that, under this Deacon waste water system, without bothering the inhabitants very much by making a periodical inspection of the houses where waste is going on, we bring the consumption down to 18·6 gallons per head per day.

27,829. (Sir John Dorington.) This is the district which, in your opinion, is effectively supervised?—Effectively supervised.

27,830. It does not matter what your machinery is; it so happens it is Deacon's waste water meter?—Yes.

27,831. It is a district which is properly supervised?—Yes.

27,832. (Mr. Mellor.) Have you got constant supply now?—Everywhere.

27,833. Can you tell me at all the difference between the old system and the constant supply in respect of waste?—We can hardly do so yet. We only brought our district finally under constant supply at the end of last year; but we know, of course, under a constant supply in times of drought, or in times of frost, the waste is very much greater than under the old system.

27,834. Can you give me any estimate for any parish in your district with regard to the difference between

the state of things now and the old state of things?—No, I am afraid I cannot. Of course, now we have the district under constant supply, we hope by effective waste supervision to bring the quantity down very materially. I think these particular districts prove that we shall be able to do so.

27,835. Then you can give me no estimate at all?—I am afraid I cannot.

27,836. Not even a rough estimate?—No, I should not like to, really.

27,837. (Chairman.) You have put in a table containing 11 districts?—Yes.

27,838. And a total number of 7,349 houses?—Yes.

27,839. I see you have reckoned the population there, not at 7·75, but at 6·9 per supply?—Yes, because these districts are all within certain wards of the parish of Fulham, and that gives you the average population in those wards. It has no connexion with the general question of population at all.

27,840. Then you bring out the average daily supply and the average per head?—Yes.

27,841. The average of all the 11 districts being 18·6?—Yes.

27,842. Can you tell me what it was before you got effective supervision?—The district engineer tells me in some cases double.

27,843. (Mr. Mellor.) Before effective supervision?—Before effective waste supervision.

27,844. (Sir John Dorington.) Could you give that with regard to any one of these numbers—1, 2, 3, 4, 5, 6 or 7?—Yes.

27,845. (Chairman.) The engineer will do that?—Yes, and that can be put in if you wish.

(Chairman.) Yes, it will be very convenient if we could have it.

27,846. (Sir John Dorington.) Take any one of them?—I am afraid we have not got it here; but we can get that information. We can put it in to-morrow if you wish it.

See
28,049.

27,847. (Major-General Scott.) What should be added to the 18·6 to represent trade supplies over the district?—In these districts we have read the meters before taking those, and absolutely deducted the trade supplies.

27,848. Assuming you managed to reduce all your district for domestic supplies to 18·6 gallons per head, how much more would have to be added to represent the trade supplies of the whole district?—I suppose 25 per cent.; but we do not at all expect, I may say, to reduce it to 18·6 per head all through the district. This figure of 18·6 is exclusive of meter supplies, road watering and flushing; but it does include laundries and other trades and businesses using extra water, but not supplied by meter, so that there is some slight small charge for trade purposes other than those.

27,849. (Mr. Mellor.) Does it include stables?—Yes.

27,850. (Chairman.) And gardens if there are any?—Yes.

27,851. (Major-General Scott.) What is your present daily supply?—43 gallons per head for 1898.

27,852. (Chairman.) Over the whole district?—43 gallons per head over the whole district.

27,853. What is the total multiplied by the population?—12,079,000 gallons.

27,854. What do you think a fair estimate of the reduction of that quantity would be if you applied that system of Deacon's meters all through, and did your best with it?—It is very difficult to say. I dare say we could get it down to 30 or 35 gallons a head.

27,855. What would that represent in a lump?—About one-sixth off—about two million gallons off.

27,856. (Sir George Bruce.) Was not the supply a good deal above the average in 1898, when it was very dry weather?—It was above the average, but it was less than the supply of 1897; at least our district was. That is very easily accounted for, because the hot weather of 1898 came late; it came after the London season was finished—after Parliament had risen—and there was not nearly the use of water in our district that there would have been if the drought had come earlier.

27,857. What was your supply per head before the great frost, when things were in their normal condition—in the year 1894 or 1893?—40 gallons.

Mr. G. H. Gill. 27,858. Was it so much as that?—It has been increasing since the year 1891—since the constant supply began.

27 Feb. '99 27,859. (*Major-General Scott.*) Your average for some years past is something over 43 gallons a head?—Yes.

27,860. (*Sir George Bruce.*) They must have had too much water?—Yes.

27,861. (*Chairman.*) The difference between that and your 18'6 is so enormous that it inspires one with a little distrust about these figures?—I do not say that we can get it down to 18'6 all over the district.

27,862. Why not elsewhere, if you can get it down in Fulham?—This is on one class of houses in Fulham.

27,863. (*Mr. De Bock Porter.*) What is the rateable value of this particular area?—I should think you may take it about 30l.

27,864. (*Mr. Mellor.*) And it is just in that class of house that the most waste takes place, is it not?—I should not like to say that.

27,865. (*Chairman.*) In the good houses there surely is not much waste?—I am afraid there is a good deal. You see, in the older houses, the fittings are old; and in these houses the fittings, though they are not of a very good class, perhaps, are comparatively new in this part of the district.

27,866. (*Mr. De Bock Porter.*) And there would be fewer baths in this district, would there not?—Each of these houses has two water-closets, a bath, and high service.

27,867. (*Chairman.*) But you cannot charge it?—No, we cannot charge it.

27,868. It is so staggering to have a supply in fact of 43 gallons per head, I think, you say throughout your district and only 18'6 in this particular district?—That is excluding trade.

27,869. You add one-fourth for trade?—Yes.

27,870. One-fourth would be 4½ which added to the 18'6 makes 23, and 23 is about half of 43?—This was to show the sort of supply we should have to give in the part of the district we expect our increased supplies from in Fulham.

27,871. (*Sir John Dorington.*) You have been inspecting your houses recently where you have introduced constant supply; what has been the result of that inspection?—In a very large number of cases we find the fittings very defective.

27,872. And do you succeed in getting these defects remedied?—To a very large extent we do. In fact, we do not turn on the constant supply until 80 per cent. have complied with the regulations respecting fittings.

27,873. Have you had any difficulty in getting it done?—We have had very considerable difficulty.

27,874. Practically you have achieved your object?—Yes. Of course, we do not turn on the constant supply, as I say, till the statutory number of 80 per cent. has been complied with.

27,875. (*Chairman.*) Why have you picked out these 11 districts, can you give us a similar table for any other district?—No, this is solely for the sake of our increase of 8,000 supplies which we estimate, and these districts are in the wards of the parish in which these new supplies will be situate.

27,876. But if, in the rest of your district we are to expect not only 43 gallons per head per day, but possibly an increase upon that going up to, I do not know what, that would quite counterbalance this small number of 8,000 houses?—We think when we apply this system to our district as we hope to eventually—we are extending it now in the eastern part of our district—that we shall reduce that 43 gallons most materially.

27,877. Have you been able to reduce the 43 gallons anywhere else, except in these 11 districts?—No, because we have only just started this year.

27,878. I only wanted to know the facts. You have not then?—No.

27,879. (*Mr. Mellor.*) I understand this is a house to house inspection?—This is an inspection under the Deacon system.

(*Chairman.*) They listen to the meter at night.

27,880. (*Mr. Mellor.*) What I want to know is how does the meter at the mains tell you at which house the leakage is taking place?—The meter does not. The

inspectors go round and listen at each house, and where they hear water going, they make an inspection.

27,881. (*Sir George Bruce.*) That is after having discovered that within a certain district the meter indicates waste?—Exactly.

27,882. Then the meter only indicates that in a certain district there is waste?—In a certain district.

27,883. Then you have to follow that up by finding where the waste is?—Yes, by making a night inspection.

27,884. (*Mr. Mellor.*) Supposing a main is defective, would the meter show that in the same way?—Yes, we have discovered an enormous number of leakages in that way—small leakages.

27,885. Are your mains simply cast iron pipes without lining or are they lined? Do they line them at all with anything?—They are whitened with white composition—lime white.

27,886. (*Chairman.*) That leads me to ask you at once—although it is a little out of the order of ideas—would you suggest that any additional powers for preventing waste are desirable in the interests of the public generally, and of the water companies in particular?—I think it has been suggested. The matter has not been pressed forward, but the engineers of the company have suggested it.

27,887. Now is your time to press forward anything?—The engineers of the company did go into that some years ago, but the matter has never come to a head yet.

27,888. Then you are not prepared to offer us any suggestions?—I am afraid not.

27,889. (*Major-General Scott.*) Have you made any calculation of the financial results of a particular saving, say 5 million gallon per day in the water supply of any district?—No, I have not.

27,890. That is the point of view which particularly bears on our inquiry?—Yes.

27,891. (*Mr. Mellor.*) Do you pump less water in consequence of the saving? Supposing you are able to check, as you told my Lord, in the 11 districts you do check the waste and you have reduced the supply to a certain quantity in consequence, have you pumped less in consequence of that?—To that extent undoubtedly we have.

(*Chairman.*) The saving is enormous.

27,892. (*Major-General Scott.*) Would it be possible to make out a statement showing the financial saving—showing the present value of the saving of 5 million gallons a day between this and 1937?—I am afraid it would be rather difficult, I dare say it could be done.

27,893. On the basis of your present expenditure, assuming your supplies were reduced by 5 million gallons a day between this and 1937 what would be the financial result?—I suppose it would be possible to find out the saving in pumping and other charges.

27,894. (*Chairman.*) It would be a saving in pumping only; it would be only one item?—Pumping and filtration.

27,895. (*Major-General Scott.*) There would be a saving in capital expenditure?—Yes, we should not require so much storage.

27,896. You would not require such an extension of works?—No.

(*Mr. Fember.*) You might save the whole of that 350,000l.

27,897. (*Chairman.*) It seems very absurd that hundreds of thousands of pounds should be spent in order to enable people to let their water run to waste. (*To the witness.*) You have actually no suggestion to make to us as to how this waste might be prevented?—By extending this system of waste water meters, no doubt it can be prevented.

27,898. You mean that the companies have got the powers in their own hands if they choose to exercise them?—Certainly, and we are exercising them now. My Board have authorised nine more districts now to be put under this system immediately, and they propose extending it over the whole of the district.

(*Mr. Pope.*) Of course, the Deacon meter is familiar to us all in Liverpool and the North; it detects the waste, but it does not prevent it, of course.

(*Witness.*) No.

(*Mr. Pember.*) For that we want all those regulations of Bradford.

27,899. (*Chairman.*) You have not to complain in your district, of what we have heard takes place in the East London district, namely, fittings being put in that are not satisfactory to you to start with, and making the round of a whole street of houses?—No, I do not think that is quite applicable to our district. Of course, the fittings put in in our district in the poorer parts are not particularly satisfactory; they might be better undoubtedly.

27,900. (*Mr. Mellor.*) Have you any power to require better fittings?—No; under the Regulations we are bound to pass fittings, if they do not leak; if they do not waste water.

27,901. (*Sir John Dorington.*) You have a common form, I think, enumerating all ordinary defects?—Yes.

27,902. And you make a mark against the defects you have found in a particular house?—Yes.

27,903. Have you got that form?—No, that is obsolete now. Our district is under constant supply. That form is only served now where there are defects in the fittings.

27,904. It enumerates all the possible defects in the house?—Yes.

27,905. But only certain ones are applicable to that particular house?—Yes, they are marked with a star.

27,906. (*Mr. Lewis.*) Suppose you have the power to insist upon superior fittings being introduced, would not that be a great advantage?—Certainly, no doubt.

27,907. Is there any reason why you should not obtain such powers?—No, we should be very glad to have them, I am sure.

27,908. (*Chairman.*) There must be a limit to that, must not there? You must not put upon a small householder and a small house, an unreasonable expense?—No.

27,909. (*Mr. Lewis.*) Can you explain how it is that in Birmingham, the consumption per head is so low as compared with other places?—No, I cannot. I do not know anything about that.

27,910. Has that anything to do with the superior class of fittings do you think?—It may be so, I cannot say.

27,911. Or do you think it is due to better supervision?—Of course, in our district we admit that during the last seven years the fittings have been neglected, while we have been bringing the district under constant supply, and the supply has gone up abnormally.

27,912. (*Mr. Mellor.*) Have you any houses without cisterns, so far as you know?—There may be a dozen or so, but I really do not know of any now.

27,913. (*Major-General Scott.*) No houses without cisterns?—None that I know of without cisterns. There may be a few in the district—very few in our district.

27,914. How do you manage to maintain cisterns so completely, considering that other companies, like the East London, have got an enormous number of houses without cisterns?—We have always insisted on it.

27,915. (*Chairman.*) And your local authorities have not insisted the other way?—I have heard cases in which they did not like it, but we have said that we would not lay the water on unless a cistern was provided.

27,916. (*Sir John Dorington.*) Supposing they removed a cistern from a house, could you cut off the supply until another cistern was replaced?—That is rather a matter of law, but I think so.

27,917. Apparently in the East London that is not the case?—If there was waste we could certainly, but perhaps it is doubtful.

27,918. (*Major-General Scott.*) I think, under the Act of 1871, unless a house is provided with proper fittings you can cut off the supply?—Yes, unless it is provided with proper fittings.

27,919. (*Chairman.*) Proper fittings include cisterns; we had that thrashed out before?—Our own Act of 1852 provides that there shall be a cistern in each house.

27,920. Yes; but does it provide, if the cistern disappears from any accident, that you may cut off the supply?—No, I do not think it provides for that case

exactly. Of course, where there is waste, it does provide that we can turn off the water. *Mr. G. H. Gill.*

27,921. (*Mr. Rickards.*) Under the Act of 1871, if any person's fittings are "out of order, or not as prescribed, the company may by notice in writing require such person within 24 hours after the date of service of such notice to cause the same to be repaired so as to prevent the waste of water." That is only waste of water?—Still, if it was a waste arising from the cistern, I suppose we could insist on it. 27 Feb. '99

(*Chairman.*) Want of a cistern will not produce waste.

(*Mr. Littler.*) A cistern is a "fitting" under the interpretation clause.

(*Mr. Rickards.*) "Fitting" does include a cistern.

(*Chairman.*) Yes. We have had that question before us, and it was answered in that way; but I do not know whether it depended upon some special Act.

27,922. (*Mr. De Bock Porter.*) Was your company the first to deal with waste in this way?—No, I think not. I think the Lambeth dealt with it some years ago. I think they were rather the pioneers of this Deacon system.

(*Chairman.*) I do not think we had this reduction to 18 gallons a head shown us anywhere as yet. I do not recollect it.

27,923. (*Mr. Mellor.*) Is it necessary to take up the street to use this meter?—Just to a very small extent, to make the necessary connections.

27,924. (*Chairman.*) Where does this meter stand in the street?—Under the ground, in a box.

27,925. In a manhole?—Yes, in a manhole, with a box and a cover. It is under the footway frequently.

27,926. (*Mr. Mellor.*) Have you manholes in the footways?—Yes.

27,927. (*Chairman.*) And where does the inspector go at night and listen, because this is a ghastly picture?—He listens at the stop-cock outside the house with a stethoscope.

27,928. Have they to go down into the area of the house?—Not as a rule, my Lord. The stop-cock is in the pavement.

27,929. (*Major-General Scott.*) I think you will find, if you refer to the 1871 Act, section 29, that you have power to cause cisterns to be put in. It reads: "Where in any such district the fittings of any person are out of order, or not as prescribed, and cisterns are prescribed in your Act, are they not?—They are prescribed by our Act of 1852."

27,930. Then a section follows to show how such deficiencies may be prevented?—Yes.

(*Chairman.*) We have had this before us already.

(*Witness.*) These are prescribed fittings under the Regulations made under this Act of 1871. I do not think there is anything about cisterns being a prescribed fitting there. The section to which Major-General Scott has called attention, 29, of the Metropolis Water Act, 1871, provides that the prescribed fittings must be put in, but the prescribed fittings, I think, are the fittings prescribed under the Regulations of 1871—the Regulations made under this 1871 Metropolis Water Act, and I do not think that a cistern is a prescribed fitting under those regulations.

(*Mr. Mellor.*) I think not.

(*Mr. Claude Baggallay.*) Section 3 of the Act says that "prescribed" means prescribed by any regulations made under the authority of the Act.

27,931. (*Sir John Dorington.*) Does that supersede your private Act?—No, I think not. Our private Act provides that there shall be cisterns. This is merely a reference to the fittings prescribed under the regulations made under this Act.

27,932. (*Chairman.*) I see you want to contradict something that has been said by some other witness. I do not know that we need go into the details about what Mr. Gomme has said, or what Mr. H. L. Cripps has said?—They are really only just small matters of detail—matters of account. I think we could settle that all with Mr. Gomme without troubling your Lordship.

27,933. I shall be extremely glad if you will?—They are merely clerical errors.

Mr. G. H. Gill. 27,934. As I understand you, up to 1852 you charged as you liked—put your own value?—Yes.

27 Feb. '99 27,935. In 1852 annual value was made the basis of your charge?—Yes.

27,936. How did you ascertain the annual value after 1852?—That is rather difficult to say now. I think we took the rent as our guide.

27,937. You took the rent as your guide, but you did not adhere to it strictly, I suppose?—No, we did not go up to the full in a number of cases.

27,938. Then came Dobbs' case?—Yes.

27,939. Which said that annual value meant the net rateable value?—Yes.

27,940. What effect had that upon your charges. Did it raise them or lower them?—The net value or rateable value when we came to rateable value, do you mean?

27,941. Net value is net rateable value?—So it was defined by that Act.

27,942. Dobbs' case and Torrens' Act are exactly the same in effect. They decided that you were not to take the gross estimated value, but the net rateable value?—Yes.

27,943. Now, what I want to know is when Dobbs' case was decided did you alter your rates?—At once.

27,944. Did you raise them or lower them, or both?—We lowered all the small property nearly. It had the effect of lowering the small property very greatly, because it brought a great number of houses down below 30*l.* a year. We lost all the charges for services. Then it had the effect of raising others.

27,945. (*Mr. A. de Bock Porter.*) On the whole, did you gain or lose?—As a whole we gained.

27,946. (*Chairman.*) Then Dobbs has been made a hero of by mistake apparently?—Quite so.

(*Mr. Pope.*) In Chelsea.

27,947. (*Chairman.*) And we had it in the same way with regard to other companies. (*To the witness.*) Then came Torrens' Act?—Yes.

27,948. Which, as I understand it—though you seem to take a different view—simply declared as general law what Dobbs' case had decided already in a particular case, namely, that the rateable value was the annual value under the Act of 1852?—Yes, it so defined it.

27,949. It declared it rather than defined it?—Yes.

27,950. Upon that what did you do?—We immediately put our charge—

(*Mr. Littler.*) What that Act did was to bind the companies by the actual assessment appearing in the companies' books. That was the distinction made. It took away any question from the magistrate as to what was the annual value or the rateable value, and it bound everybody by what appeared on the valuation list as being the rateable value.

(*Mr. Pember.*) The only evidence.

(*Mr. Littler.*) That was the only evidence—which could not be got away from.

(*Chairman.*) That was only a matter of evidence; it made no difference in principle.

(*Mr. Littler.*) I say it was a matter of evidence, and then they declared the only evidence should be the valuation list itself as it is arrived at by various assessment committees.

(*Chairman.*) In Dobbs' case it had also been decided that the net rateable value was to be taken.

(*Mr. Littler.*) It left it open for the magistrate to decide what it was. That was the only difference.

(*Chairman.*) It simplified matters.

(*Witness.*) Perhaps I might say—I think it would be interesting—that I heard Lord Bramwell himself say after he had given that judgment—in the course of a few weeks afterwards—that he had never intended net value and rateable value as shown by the parish books to be one and the same thing; but it was so defined by Torrens' Act, of course, and there was an end of it.

(*Chairman.*) I should like to know what Lord Bramwell did mean then by net value, because I know no medium between net and gross.

(*Mr. Littler.*) It means what Dobbs meant at the most.

27,951. (*Chairman.*) Did Lord Bramwell go round to all the water companies and tell them this?—No, I merely heard it in a speech he made.

(*Mr. Rickards.*) He wrote to "The Times" on the subject, I believe, my Lord.

(*Witness.*) Yes.

27,952. (*Chairman.*) As I understand, as soon as Torrens' Act was passed, you felt it incumbent on you to screw up all your water charges?—We had to screw such an immense number of them down, that the directors felt that they had no alternative but to take the rateable value right through.

27,953. No alternative you say? Your Act fixes your maximum charge at so much per annual value?—Yes.

27,954. But you were not bound to charge right up to the maximum?—No, we were not bound to.

27,955. But you felt it your duty to yourselves to charge the maximum in each case?—Yes; and to our shareholders.

27,956. Just let me take a particular example. Can you tell me what was charged in 1845 upon, I will take a house as an example, No. 30, Queen Anne's Gate—Queen Anne's Square it was called then. That was before Dobbs' case—before the Act of 1852?—I do not think I can say, unless it is in the evidence of 1852. I am afraid I cannot answer that unless it is in the Blue Book.

27,957. I suggest to you that 3*l.* 6*s.* 0*d.* was the amount you charged for water rent by agreement in 1845 on that house?—Yes, that may be so.

27,958. Then in 1878 the water rent I find jumps up to 8*l.* 18*s.* 0*d.* for the same house. Can you at all account for that?—Not at all my Lord, unless I—

27,959. (*Mr. Mellor.*) Was it the superior quality of the water?—Well, of course the quality of the water would have been very greatly improved, no doubt, between 1845 and 1878. We had a very large capital expenditure.

27,960. (*Chairman.*) In 1884 the rateable value having been increased by 1*l.*, did the water rate jump up to 10*l.* 12*s.* 0*d.*?—I cannot say.

27,961. These are facts that are very interesting. In 1886 I suggest to you that the rateable value became 34*l.*, and the water rate, out of pure sympathy, went up to 13*l.* 8*s.* 4*d.*?—Yes, that would be so on that rateable value.

27,962. In 1892 it goes up to 14*l.* 14*s.* 8*d.*?—Then, of course, we could show an immense number of cases the other way.

27,963. One minute; this is a fair example of one way, is it?—Yes.

27,964. That seems, you know, to the uninformed mind, as if Dobbs and Torrens had been malefactors, because to go from 3*l.* 6*s.* 0*d.* to 14*l.* 14*s.* 8*d.* for the same house, is certainly not encouraging to reformers?—No, I am afraid not.

(*Mr. Rickards.*) They had no baths then, my Lord.

27,965. (*Mr. Mellor.*) As time goes on, I suppose this rate will go mounting up in these houses?—It may go down, it may go the other way.

27,966. (*Chairman.*) I have given you one case, but understand you have got a nice little table of cases in the opposite direction. If so, will you put it in?—Yes. (*The witness handed in Table. See Appendix P, 7.*)

27,967. You have picked out 40 houses on which, in 1852, you charged 57*l.* 14*s.* 0*d.* and in 1894 you charged 37*l.* 6*s.* 8*d.*?—Yes.

27,968. How has that decrease arisen, I should like to know?—From decrease of rateable value in that part of the district.

27,969. You could not, therefore, I suppose, charge more than 37*l.* 6*s.* 8*d.*, however much you wished it?—No.

27,970. Where are these roads? Where is Britannia Road?—That is in Fulham, and the small table attached is to show 22 houses, and the manner in which property has fallen in value—in that part of Kensington—Redcliffe Square and Finboro' Road. There has been an enormous decrease in the rateable value there—all over that part of the district.

27,971. Then there are 62 houses in your district, therefore, according to these tables, in which the

amount of the rateable value has decreased?—That is all I have shown on this table, but I could give a great many hundreds and thousands.

27,972. Have you got any general table comparing the rateable value of your whole district as it was formerly, and as it is now?—Yes. This table was got out for a special purpose, but it was never used before the Balfour Commission.

(The witness handed in Table. See Appendix P, 8.)

27,973. This applies to your whole district, does it?—Yes, to our whole district. I merely mention the fact that it was not used before the Balfour Commission to show why the figures given are for 1890-91 instead of 1896.

27,974. Let us take it as it is in 1891. Then I take it in your whole district there were 5,136 cases in which the premises remaining the same the assessments were raised?—Yes.

27,975. And raised to the amount of 68,030l.?—Yes.

27,976. On the other hand, there were 5,756 cases in which the assessments were reduced?—Yes.

27,977. Making a reduction of 44,340l.?—Yes. And 1,145 houses pulled down which we lost for the time, you see.

27,978. On the other hand, there is the enlargement and rebuilding of premises by which you gained?—Yes.

27,979. And new houses added?—Yes.

27,980. What I want to know is what your gain was on the premises that remained unaltered, balancing, of course, those where the assessment was raised and those where the assessment was reduced; have you worked that out?—No, I have not got that out. This was merely made for a special purpose.

27,981. You cannot tell what it is without a calculation?—You cannot tell it exactly without working it out for each house.

27,982. Can you tell me what difference it has made in your own rates—in the rates that the company had to pay in that interval of time? What I mean is this: Several of the companies have showed us that they had much more to pay in increased rates on their own premises than they gained by any increase in the rates that they charged upon?—I have that. I have it back to 1881 if your Lordship cares to have it.

(Chairman.) I want it before the quinquennial valuation of 1891, and afterwards.

(Mr. Rickards.) We have made it out since 1881, if that would answer the purpose.

27,983. (Chairman.) I do not want a mass of figures. I want something that is pertinent to this table that the witness has put in. (To the witness) You gained in your rates, whatever your charges were, the difference between 68,030l. where the assessment was raised and 44,340l. diminution of assessments?—Yes.

27,984. You say you cannot without calculation give us what you got on that balance?—No, I can give you the increases in our rates and taxes that time.

27,985. Give us that, please?—For that period it happens to be particularly small. In the assessment of 1885 we were paying 7,952l. a year in rates and taxes, and in 1891 for the 1891 assessment 9,718l.—about 1,800l. difference. But our rates and taxes in the next quinquennium went up to 13,088l., and they are now 15,071l.

27,986. Then we shall have to compare that with other figures?—Yes.

(Mr. Rickards.) There has been a rapid increase lately. I do not know whether you have heard the last figure.

(Chairman.) Yes, but that tells us nothing unless we can compare it with the difference in their charges.

(Witness.) These rates and taxes are exclusive of income tax.

27,987. I suppose so?—The income tax, of course, is calculated on the profits. These are the rates and taxes on the works and mains.

27,988. (Mr. Mellor.) The income tax has nothing to do with it?—No, nothing to do with it.

27,989. (Chairman.) I wanted to contrast what you have lost by the increase on your assessments with

what you have gained by the increase of the assessment of the people whom you charge. That is the whole object of my questions you know, and that you cannot give us?—No, I cannot give it.

27,990. (Mr. Pember.) Do not you find that on the table you have just put in?—No, it gives the numbers merely.

(Mr. Pember.) It gives the amount of increase of your rateable value in pounds and the reduction.

(Chairman.) Yes, no doubt you can therefore deduct, as I say, 44,340l. from 68,030l., but he says he cannot tell us what their charges were.

(Mr. Pember.) Take them at 5 per cent., it cannot be far out.

(Witness.) At 4 per cent. it would be something under 4,000l.

(Mr. Pember.) But ought not you to add to that, 39,099l. for the houses pulled down.

(Chairman.) No, we are seeking to estimate the operation of the quinquennial re-valuation.

(Mr. De Bock Porter.) On this table you have just put in, is not there a net increase in rateable value of 184,899l.?

(Witness.) Yes, I daresay there is.

(Mr. Pember.) Surely that cannot be. That is new houses supplied.

(Witness.) Yes, including that.

(Mr. Pember.) But then, mind you, that is not owing to the quinquennial valuation.

27,991. (Mr. De Bock Porter.) I suppose some of those new houses are in the place of the houses pulled down, are they not?—Yes, that would be so.

(Mr. Pember.) 25,801l. he gives for that.

27,992. (Chairman.) I take it that the 1,145 houses pulled down have not yet been replaced by anything?—In this table they would not be, they would not be replaced.

27,993. (Mr. Pember.) 233 seemed to have been replaced, because he has given a number of instances in which the increase in assessment is accounted for by the enlargement or re-building of the premises?—That is a different thing. That is accounted for by enlargement or re-building.

27,994. (Mr. Mellor.) When a house is pulled down how does the ground stand in the valuation list. Does it remain in the valuation list, or not?—Sometimes, but not for our purpose. Of course, there is no water supply and no water charged for.

27,995. (Chairman.) You must get a water consumer before you can charge your water rate, I suppose?—Yes.

(Mr. Pember.) Then, as far as the quinquennial valuation goes, the only two items to be considered in that table are the 68,000l. and the 44,000l.

(Mr. De Bock Porter.) But they are not dealing with the same properties.

(Mr. Littler.) I think your Lordship will find it is an easy sum. All these relate to one another. The increase is 93,831l., the decrease is 83,439l., making a net increase of 10,392l. That at 4 per cent. is 412l., and its rateable value has increased 1,800l.

(Chairman.) It does seem to be more.

(Mr. Littler.) That is what it comes to.

(Chairman.) But he says besides the 4 per cent. there are baths.

(Witness.) Yes, it is complicated with that, and without going into each case you cannot get it.

(Mr. Littler.) Take it at 5 per cent. it only makes it 519l., instead of 412l., as against 1,800l. increase in the rateable value of his premises. Taking the increased payment as rateable value, they paid 1,800l. and received 519l.

27,996. (Chairman.) What dividend are you paying in Chelsea, I have forgotten?—At the present moment 10 per cent., our statutory dividend, and 1 per cent. for back dividends, 11 per cent.

27,997. How soon do you reckon that your back dividends will be paid off?—As our chairman said, it would be something like 100 years at the present rate.

Mr. G. H. Gill.

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Mr. G. H. Gill. 27,998. Yes, I have got that already. So that for 100 years the Chelsea consumers are not to look for any rebate in their charges?—Not unless the sinking fund clauses are withdrawn.

27,999. But even then, how many years would it be?—It might be reduced to 50 or even less.

28,000. I do not know which of us would derive the benefit. Now you have some corrections you wish to make. Please make them in your own way?—I will be as short as I can.

28,001. Give us anything you think material without the labour of hunting through the evidence?—They are clerical corrections on the accounts put in by Mr. H. L. Cripps, mistakes which may very easily have been made. I think I can correct those with him and not trouble your Lordship about them, but you want them to go on the notes, I suppose, so I will just go very shortly through them.

28,002. Tell us anything you think material?—In the table put in by Mr. H. L. Cripps, at Question 172—

28,003. This is one of Mr. Cripps' tables?—Yes. The first table, column 12, the amount of dividends paid should be 74,602*l.* instead of 75,534*l.*, and there should be put in column 14, 932*l.* for a payment on account of back dividends.

28,004. (*Sir John Dorington.*) In place of nil?—In place of nil. I say, in column 14, the amount should be stated 932*l.* Then, in column 15, one eighth per cent. should be stated as percentage paid in respect of back dividends.

28,005. Please go on?—Then, in a table showing capital account at the end of 1895, the amount of premium on stocks, 8,989*l.* 15*s.*, has been apparently omitted from column 9, that is, for premiums on the 4½ per cent. debenture stock. Then in the capital account at end of 1896, column 8, the amount should be 162,481*l.*; column 13, same table, the amount should be 746,159*l.* That arises from the fact that 133*l.* 4½ per cent. preference stock was converted, and must be added to the ordinary stock and deducted from the preference stock. Those are, I think, the only corrections I have to make.

28,006. Is there anything else you want to correct?—There is a correction I might make, my Lord, but I do not know that I need correct it. It was an entire misapprehension.

28,007. Will you tell me what it is you want to alter?—It is with reference to the table Mr. Haward put in at Question 2258.

28,008. Very well?—With reference to Mr. Haward's table, and the cross-examination by Mr. Rickards, at Questions 2983 to 3005, and at 3057, the misunderstanding has arisen.

28,009. What is the misunderstanding?—As to the capital we had issued to our shareholders at par.

28,010. Can you tell me in a few words what is the statement that you want to correct?—I really wish to correct the misapprehension under which we cross-examined. We cross-examined Mr. Haward under a misapprehension.

28,011. You want to correct your own counsel?—I do not wish to go into it unless your Lordship thinks it is necessary.

(*Chairman.*) I think nothing. I have not the slightest idea what you are talking about. I want to know, in the first place, what you think was wrong and what you say is right.

(*Mr. Rickards.*) It was with reference to the Firth Returns.

(*Witness.*) I think, if I may say this, it will explain it. The misunderstanding, no doubt, arose from the company having taken the figures given in Mr. Haward's table to represent the total capital paid up in each year, and not, as Mr. Haward presumed meant it to show, capital paid up solely in respect of stock taken up at par by shareholders. To take the year 1874, on which a special cross-examination was made, it happened in this year that bonds to the extent of 94,200*l.* were paid off or cancelled, and bonds or debenture stock were issued in the same year for 94,600*l.*, making a difference of 400*l.* on loan capital. There was also in the same year a sum of 635*l.* of share capital taken up. The increase in capital during that year was, therefore, only 1,085*l.* as stated by Mr. Rickards. It appears, however, that the bonds issued

in that year, 94,600*l.*, were issued under a resolution of the Board that they should be allotted to: "All who might apply for them." As a fact, out of the 94,600*l.* persons who were shareholders applied for and took up 11,400*l.*, this added to the 635*l.* of share capital taken up by shareholders makes Mr. Haward's figures for the year 1874, 12,085*l.* It is merely to show how that figure is made up.

28,012. What does it signify how it is made up?—We took it to mean it was a total increase of capital on the year.

28,013. You mean you misunderstood Mr. Haward before and you are now showing you ought not to have misunderstood him?—Yes, that is so. We quite admit it.

(*Mr. Balfour Browne.*) It is very handsome of them.

(*Witness.*) It is exactly as you have put it, my Lord.

28,014. (*Chairman.*) I think we might have been spared that. Is there anything else you have to correct?—No, my Lord, that is all.

Cross-examined by Mr. FREEMAN.

28,015. You answered, my Lord, various questions about the result of the assessment in the year 1891?—Yes.

28,016. Do you know as a matter of fact that in 1851 various properties were given in evidence with the assessments upon them, you may perhaps take it from me that that was so?—Yes.

28,017. If we take those same properties and compare the value which was charged upon them in 1851 with the quinquennium of 1891 am I correct in saying that it shows very nearly a rise of 100 per cent. on these same properties?—It may in some cases.

28,018. In all instances?—On those particular properties picked out it probably would.

28,019. I am taking the 10,165 properties which were then given; I am taking those same properties; am I correct in saying that there is a rise of 100 per cent.?—I cannot say really.

(*Chairman.*) Do you say 10,000 properties, because that is the whole district pretty well.

(*Mr. Freeman.*) The number of properties taken is 10,165.

(*Witness.*) I cannot speak as to the correctness of that, of course.

(*Mr. Pember.*) There is some hocus in that.

28,020. (*Mr. Freeman.*) For instance, take Belgrave Square, and I am taking not those which have been rebuilt, but the same properties, am I correct in saying that comparing the same properties in the years 1851 and 1891 that what was then 143*l.* is now 412*l.*?—I cannot say. I know the Belgravia district is decreasing in rateable value now and has been since 1891.

28,021. (*Chairman.*) Belgravia decreasing?—Now, to a great extent. Many of the houses are going down very much.

28,022. (*Mr. Freeman.*) You quite understand I am taking cases where there has been no re-building or anything of that sort—the same properties which produced to you 143*l.* in the year 1851, are now producing 412*l.*?—That is taken from your own table, I suppose.

28,023. That is taking the tables which were put in in 1851 and applying it to the same houses, where they have not been rebuilt, in the year 1891 when the assessment was made?—Of course I cannot answer that without going into it.

28,024. I will just give one other so that you may correct it if it is wrong. If you take Eaton Place, in 1851, the houses which produced you 92*l.* 3*s.* in 1894 were producing 190*l.* 13*s.*?—I could not possibly correct that or say off-hand if it were wrong.

(*Mr. Freeman.*) I did not ask you to say off-hand, I merely give it to you so that you may correct it.

(*Mr. Pope.*) Where is the proof? That is not evidence.

(*Chairman.*) No, that is not evidence, it is only a suggestion.

28,025. (*Mr. Freeman.*) There is one other question I wanted to ask you. I think I caught you to say that your back dividends were 750,000*l.*?—I think the chairman said about 700,000*l.*

28,026. And your chairman told us the contribution to the sinking fund had been 2,000*l.* a year?—Yes.

28,027. Do you seriously say, having those facts before you, that the difference of having to contribute 2,000*l.* a year to the sinking fund would reduce the time in which you could pay the back dividends from 100 years to 50 years?—No.

28,028. Then I do not follow your answer?—We were looking to our estimate of capital expenditure in future, namely, 350,000*l.*

28,029. You mean to say if you take the 2,000*l.* which you will have to pay on your present issue, and the sinking fund on the future issue, the whole will be such a sum as to reduce it from 100 years to 50 years?—Probably.

(*Mr. Freeman.*) That can be tested.

(*Mr. Rickards.*) A question has arisen as regards the Select Committee of 1821 and the arrangements between the companies, and it has been suggested that those arrangements were undesirable and apparently that the Select Committee of 1821 thought so. That is not the case; and I should like to be allowed to read a small portion of the report or hand it up to your Lordship at any rate, of the Committee of 1821,—these arrangements as to non-competition in the districts.

(*Chairman.*) If you have anything short you can read from the Committee of 1821 that refers to the arrangements of the Chelsea Company, it will be in point at this moment.

(*Mr. Freeman.*) It is on the notes already about the second day.

(*Chairman.*) That was 18 months ago.

(*Mr. Rickards.*) It says here “Your Committee are satisfied that, from the peculiar nature of these undertakings, the principle of competition requires to be guarded by particular checks and limits in its application to them”—that is the water companies—in order to render it effectual without the risk of destruction to the competing parties, and thereby ultimately of a serious injury to the public.” Then it goes on to say in what cases competition is usually advisable—that is ordinary trade. Then it says that the competition of the company “was carried on during several years at a very ruinous loss, and must, in all probability, have led to the extinction of all except one or two of the wealthiest, as it actually did to that of the smaller companies, but for an arrangement which finally took place, and by which the supply of the town was partitioned between them, each company withdrawing its services within a line agreed upon, and exchanging with the other the pipes beyond its own boundary. This arrangement was effected between the New River and East London Companies, about the end of 1815; and between the New River, Chelsea, West Middlesex, and Grand Junction at the end of 1817. In the former case a deed was entered into by the two companies, binding them by penalties to abstain from serving beyond the line drawn between them. In the latter, the four companies entered into no engagement to that effect, but left it to the prudence of each other whether they would at any future time embark at the expense of fresh capital in a renewal of the contest. This difference of proceeding appears to have been occasioned by the wording of the West Middlesex and Grand Junction Acts, which rendered it doubtful whether those companies could bind themselves by engagement with any others to abstain from serving within certain limits. The London Bridge Company did not take part in any of these arrangements; from the whole evidence it appears that this company was comparatively very little involved in the competition and has made no change in its system. These measures, so questionable in the first view, and carrying with them so much appearance of a combination against the public, do, nevertheless, appear to your Committee to have been measures of self-preservation, leaving the companies only responsible for the use which they might thereafter make of them.”

(*Mr. Freeman.*) There is something else which follows that, which I will read just to complete it. “It is further to be observed that, though the experiment of competition (set on foot as it was without guard

“or limit) has failed, the present situation of the companies is such, that a considerable practical check against abuse in this, as in other respects, may be expected from the apprehension of its renewal, especially if the means of renewing it are facilitated.”

28,030. (*Chairman to Witness.*) I should just like to see that Minute from which you quoted regarding your arrangement?—I do not know that I could produce that, my Lord. I will look for it.

28,031. Why cannot you produce it?—It was in the year 1817. We have the book, I believe, and I will have it searched for.

28,032. Do you mean to say you have been talking to us about a Minute all the morning without knowing that it existed?—No, there is an extract, my Lord; we have an extract from it.

28,033. An extract?—An extract from the Minute.

28,034. Made where, and by whom?—Shortly afterwards in another book. I have found a book “Extracts from Court’s Minutes,” but, of course, I cannot speak to the correctness of that, unless it is compared with the original Minute.

28,035. Have not you got the original Minute?—Not that I know of. I will look for it. We may be able to find it, but I really could not guarantee that we should find it to-morrow.

28,036. (*Sir John Dorington.*) You have got a book with short extracts on important points from the Minutes?—Yes. Of course I cannot say whether it is correctly entered; it probably is, but I do not know whether it would be sufficient for your Lordship’s purpose.

28,037. (*Chairman.*) I should like to see, not any extract, but the original Minute of 1817?—I will search for that, and if I cannot find that, shall I let your Lordship have the extract?

(*Chairman.*) Yes.

28,038. (*Sir John Dorington.*) Bring the book?—Yes, the extract book.

28,039. (*Chairman.*) But let us have the Minute of 1817, if you can?—I will let you have the Minute if I can find it.

Mr. G. H. Gill.
27 Feb. ’93

See
28,039a
28,049.

(*Mr. Rickards.*) Of course your Lordship bears in mind that there was no maximum charge, or anything of that sort, in 1817 when this arrangement was come to. The public are now protected with the limit of charges, dividends, and so on. There was no protection whatever in those days.

(*Chairman.*) You say “protected.” The charges are maximum charges.

(*Mr. Rickards.*) In 1817, when competition was talked about, there were no maximum charges, and no protection to the public whatever.

(*Mr. Pember.*) And none, of course, at the date of the Report.

(*Chairman.*) I do not know what that has got to do with the text of this Minute. We want to see the text of the Minute.

(*Mr. Rickards.*) Probably it has nothing? I was harking back.

(*Chairman.*) When there was no protection, according to the evidence, the public was much better off. Every change that has been made since has resulted in an increase of charge to the public.

(*Mr. Rickards.*) They have advantages they had not then.

(*Witness.*) There has been no increase to the poor, certainly.

(*Mr. Rickards.*) Your Lordship would like to hear some evidence of what the consumption per head in some of the districts in Fulham was before this waste prevention system was adopted.

(*Chairman.*) I should have been glad if I could have had it to-day, but if it is to come 100 pages off it is rather different.

(*Mr. Rickards.*) It shall come the first thing to-morrow morning. The district engineer will give it to you.

See
28,049.

The witness withdrew.

[Adjourned to to-morrow at 12 o’clock.]

FIFTY-SIXTH DAY.

Tuesday, February 28th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
 Sir JOHN EDWARD DORINGTON, Bart., M.P.
 ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
 ROBERT LEWIS, Esq.

CECIL OWEN, *Secretary*.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.
 Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
 Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. G. H.
 Gill.

28 Feb. 99

Mr. GEORGE HENRY GILL recalled.

28,039a. (*Chairman*.) Mr. Gill, have you been able to find the minute as to the arrangements come to between the companies in 1817, which we referred to yesterday?—I have endeavoured to look it up, my Lord, and I have found that the Minute Books are most voluminous. But they refer to the negotiations which were going on for several years. I see this was all before the Select Committee of 1821; it all came out there; and apparently after that, we had the whole history of our negotiations extracted from our minutes and entered into a book. I have it all here; but the principal points I can read in a few minutes if your Lordship pleases.

28,040. (*Chairman*.) Very well, do so then?—The first one is this "At a meeting of the Board held on the 14th August, 1816, the Court having taken into consideration the letter from the West Middlesex Waterworks read at the last Board, thereupon requested the Governour, Sir Stephen Shairp and Mr. Brent again to meet the deputation appointed by that Company at their convenience for the purpose of communicating with them upon the propositions therein contained. The Secretary laid before the Court an account of the Company's rental south and west of Piccadilly and the Inspector General's estimate of the expense of serving that district which having been entered upon the minutes of last court were ordered to remain for future consideration. The Inspector General laid before the Court the mode and expense of opposing the Grand Junction Waterworks Company effectually in the whole of the Parish of St. George's Hanover Square and likewise in the immediate neighbourhood of Grosvenor Square which having been entered upon the minutes of the last Court was also ordered to remain for future consideration." The next is on the 13th March 1817 "Mr. Brent"—that was the director delegated to meet the other Companies—having stated to the Court the substance of several conversations he had with the Chairman of the Grand Junction Waterworks Company and it appearing to the Court from such representation that the Grand Junction Waterworks were desirous that a line of District should be fixed between themselves and this Company ultimately depending upon a general agreement amongst the water Companies and that various other arrangements should be made resolved that a special Court of Directors be held on Monday next the 17th instant at 12 o'clock for

"taking the same into consideration and the mode if it should be thought advisable of carrying the object into effect." Then at a special Court on the 17th March 1817 it was resolved "That it would be beneficial to this Company to adopt measures of arrangement with the other Companies to confine their respective services to a particular line of district hereafter to be mutually agreed upon between them. Resolved that the Grand Junction Waterworks Company having expressed a desire to adopt some arrangement with this Company mutually advantageous and in which it is intended ultimately to include the other Water Companies, it is the opinion of this Court that a conference should be immediately opened with the Grand Junction Waterworks Company upon that subject Mr. Brent having then stated to the Court that the following line of District had been suggested to him by the Chairman of the Grand Junction Waterworks to be retained by this Company." Shall I read the Districts there is a long list of them.

28,041. No, I suppose they are the existing districts, probably?—Yes, practically. "It was resolved that the line of district suggested to Mr. Brent by the Chairman of the Grand Junction Waterworks Company in case no better terms can be obtained may be acceded to—Resolved that the Governour Sir Stephen Shairp and Mr. Brent be requested to confer with some Directors of the Grand Junction Waterworks Company upon this subject." Then on the 10th July, 1817—this is the principal document and the only arrangement there is—"Mr. Brent acquainted the Court that a meeting had been held at the New River Office on Thursday last, the 3rd instant, at which were present the Governour of the New River Waterworks and some of the members of the West Middlesex and Grand Junction Waterworks Companies, and having himself attended there—that a rental of 12,600*l.* of present rents had been agreed upon for the Grand Junction Waterworks Company and acceded to by them and that it was proposed that this Company should have the District mentioned in the Minute of a Court held the 17th March last." That is the district previously referred to—"With the exception of the houses on the south-west side of St. James' Street, which front the Green Park, and adding in lieu thereof Duke's Court and St. Martin's Lane, from Duke's Court to Charing Cross. The foregoing proposition appearing to the Court to merit immediate attention, it was resolved

"that a special Court be summoned to meet on Wednesday, the 23rd July, to take the same into consideration, and that Mr. Brent be empowered to attend any meeting of the Water Companies that may take place in the intermediate period." Then they held a meeting apparently before the 23rd, on the 16th July. "Mr. Brent laid before the Court the following letter from Mr. Holford, the Chairman of the New River Waterworks Company, with the memorandum for an agreement referred to therein not considering himself authorised to sign the same. "Dear Sir, the enclosed was drawn up after you left us on Thursday last, and not having had the pleasure of seeing you at the subsequent meetings. "I have desired Mr. Rowe"—that is their secretary—to call upon you to request the favour of your adding your signature, yours faithfully (signed) C. Holford." This is a copy of the memorandum "It is agreed on the part of the undersigned being fully authorised by their respective boards that an agreement be entered into between the parties giving to the Grand Junction Waterworks Company a district of present rental producing 12,600*l.* per annum (signed) "C. Holford, R. B. Robson, T. A. Green, Kennard Smith, William Fisher, Andrew Timbrell."

28,042. Who were they?—They were the representatives of the New River, the Grand Junction, and the West Middlesex Companies.

28,043. (*Chairman.*) That is an agreement?—There never was an agreement.

28,044. It says that an agreement shall be prepared?—That an agreement shall be prepared, and such agreement was apparently never entered into.

28,045. (*Mr. Mellor.*) I suppose that a similar minute was entered into the Minute Book of each of the other companies?—That I cannot say.

28,046. What year was that?—1817. Then there follows this:—"The Court took the above paper into consideration, and with reference to the district mentioned in the minutes of the last Court being guaranteed to this Company requested Mr. Brent to sign the same."

28,047. (*Chairman.*) Did he?—That I cannot say.

28,048. There is no minute to show that he did, or that he reported that he did?—I will just look, but I do not think so.

(*Mr. Pope.*) Your Lordship will remember when it was investigated in 1821 the report of that Committee alleges that no agreement was subsequently entered into.

(*Mr. Richards.*) No formal agreement.

(*Mr. Pope.*) No formal agreement, and therefore I suppose they satisfied themselves that the minutes remain.

(*Mr. Richards.*) The evidence before the Committee of 1821 shows that the Committee of 1821 had all this before them.

28,049. (*Chairman to Witness.*) Have you any other minutes to read?—No. I was only going to say that this document is several times referred to afterwards in the final negotiations exchanging pipes and settling the exact limits as to district, as the general arrangement. It is always referred to in that way. Then, my Lord, there was the question as to what the consumption per head in Fulham was before the Deacon's waste prevention system was established. One of the Honourable Commissioners wished to ask a question about it, and I have had a table made out.

(*Witness handed in Table. See Appendix P, 9.*)

28,050. You want to point out the reason why in No. 1 District there has been no diminution in the amount consumed per head, how is that found out?—The last column is added, in accordance with your request, to show what the consumption was in these districts under Deacon's meters when the meters were first fixed.

28,051. (*Sir John Dorington.*) You mean that this is the table you handed in at Question 27,827, with one column added?—With one column added.

28,052. (*Chairman.*) This had better be substituted for the other table, I think?—Yes.

28,053. Except that I am afraid the other is already printed?—I do not think it really shows very much.

28,054. (*Mr. Richards.*) It shows a great diminution, except in the first district?—Yes, but you see some of

these districts were new districts, and the fittings were in good order when the Deacon's meters were started, in the first district, for instance. *Mr. G. H. Gill.*

28 Feb. '99

28,055. (*Mr. Mellor.*) As I understand you, you attribute the waste to the defect in the fittings, that is to say, the tap is not tight, and lets the water drip?—Yes.

28,056. I did not understand you yesterday to suggest that there is any waste by leaving taps running?—That does happen especially in times of frost undoubtedly. But not for this period, certainly.

28,057. But the waste you refer to is, I understand, from defective fittings?—Leaky fittings.

28,058. Are there any fittings which are absolutely tight?—Yes, certainly.

28,059. How long do they last?—That depends, I suppose, a great deal on the nature of the fittings. whether they are sound and good ones in the first instance.

28,060. Take a good tap to begin with, a new tap, how long will it last good, so as to avoid dripping?—Our district engineer tells me two or three years, a good tap.

28,061. Two years is the outside, is it not?—Two or three years, he says.

28,062. (*Mr. Richards.*) It depends on the quality?—It depends on the quality of course. The fittings here, probably, would not last so long.

28,063. (*Major-General Scott.*) And it depends on the amount of use too?—It depends on the amount of use and the way they are used.

28,064. (*Chairman.*) I see here that in every case, except the first district, you have a very considerable diminution?—Yes, of course, that first district shows a slight rise. It was read in the first instance in April 1898, when it showed 17 gallons, but the 17.5 is the average for the half-year to Michaelmas, all through the hot weather, you see.

28,065. (*Mr. De Bock Porter.*) But in the next case you have halved it?—Yes, that was in an old district where the fittings, were in very bad order when the meter was put in, and that you see shows what we can reduce it to.

28,066. (*Chairman.*) Did you, in those cases, insist upon having fresh fittings put in?—Not necessarily fresh fittings, but having them repaired and made good—

(*Chairman.*) This is an extraordinary reduction certainly.

28,067. (*Major-General Scott.*) It would be very useful if this saving could be converted into money?—Undoubtedly.

28,068. I mean to say it would be useful for our purpose to know what the financial results of a reduction per head of a certain quantity of water throughout the metropolis would be?—Yes. Of course I do not wish, for a moment, to say that we can reduce the whole of our district to 18.6 gallons. I do not think we can, because there is a good deal less trade supply in these eleven districts than in other parts of our district.

28,069. Looking into it very roughly, it seems to me that the amount of saving in a reduction of five gallons a head throughout the metropolis would be something enormous?—Undoubtedly it would be.

28,070. (*Mr. Mellor.*) As I understood you yesterday these houses are principally new houses?—Yes, comparatively new.

28,071. But you cannot give me any figures with regard to houses we will say 10 to 20 years old?—Some of these houses are 15 years old, but you see we have just now begun this system in the older parts of our district.

28,072. I mean you cannot expect a man living in a 10*l.* to 20*l.* house to renew his taps every two years?—No; these are a better class of house than that. These are 30*l.* houses and over.

28,073. But what I rather wanted to gather from you was this, to what cause do you attribute the waste that you have been able to check?—Principally to leaky fittings, to the fittings leaking, and to the misuse of water no doubt, and carelessness in leaving taps running.

28,074. (*Major-General Scott.*) What is the character of the repairs which are usually made to a tap, to put

Mr. G. H. Gill. it straight again?—New washers principally, and waste preventing cisterns.

28 Feb. '99 (*Mr. Mellor.*) It would be worth while to supply washers to the old houses because in that way you would stop a vast amount of waste.

28,075. (*Chairman.*) On this table you have given us, there is a saving of seven gallons per head on the average in these 11 districts?—Yes.

28,076. Seven gallons per head with 50,703 inhabitants makes 354,921 gallons a day?—Yes.

(*Mr. Mellor.*) And that is in comparatively new property.

(*Mr. Rickards.*) It must not be supposed that this inspection of districts with a view to preventing waste is an inexpensive business. It costs a great deal. There has to be a very large staff of inspectors. I say this, my Lord, more in answer to Major-General Scott's suggestion with reference to turning this into money.

(*Mr. Mellor.*) But then Mr. Rickards, as my Lord has been pointing out, if you save all this water you can afford to keep a staff of inspectors.

(*Mr. Rickards.*) There is a great deal of expense about this inspection, I believe.

(*Sir John Dorington.*) It has been said that waste is cheaper than inspection.

(*Mr. Rickards.*) It is in some cases. I do not say that it is so with us.

(*Mr. Pope.*) In Glasgow they have never adopted this system, for the simple reason that they do not care how much water is used, they having got an unlimited amount of it at their back; but where there is a pinch in the supply of water then, of course, the question of waste saving is one of enormous importance.

(*Major-General Scott.*) Or where you have to pump.

(*Mr. Pope.*) Or where you have to pump.

(*Major-General Scott.*) Glasgow has a gravitation supply.

(*Mr. Pope.*) Yes, and it has an unlimited supply.

(*Mr. Mellor.*) Where you have such a large number of turncocks, I should have thought you might always have had somebody looking after the waste.

(*Mr. Pope.*) There is the difficulty of localising the waste. That is where the advantage of Deacon's system comes in. It localises the waste to a small district and then the attention of the inspectors is turned upon that small district. Then they can individualise the waste. But if you have it all over a great borough, as in Liverpool, you are never able to localise the waste. But when you can localise it into a small district of three or four streets as Deacons waste meter does, then you put on your staff of inspectors and you can individualise it and correct it.

28,077. (*Chairman.*) What is the cost of pumping per thousand gallons?—In the case of our Company do you mean?

28,078. Yes?—We have two lifts, one at Molesey into the reservoirs, that is about 4s. 6d. to 5s. per million gallons. Then our main lift is from Surbiton to Putney Heath, a height of 175 feet. Of course, the cost varies with the price of coal but you may take it, I think, that 17s. 6d. would be a fair average.

28,079. (*Chairman.*) That would be a mean?—A mean over a series of years.

28,080. (*Sir John Dorington.*) For both lifts?—No, for the lift from Surbiton to Putney 17s. 6d., that is merely the coal. When I say the cost of pumping I mean merely the cost of coal.

28,081. (*Mr. De Bock Porter.*) Nothing for wear and tear of engines?—It is not included in that. That is the mere cost of pumping.

28,082. (*Sir John Dorington.*) Have any of the other water companies, do you think, similar detailed information with regard to their districts that you have?—That I could not say.

28,083. (*Chairman.*) I see Mr. Lass gives us your cost of pumping per thousand gallons at 36d.?—That includes everything. Of course I was only alluding to the cost of coal-pumping.

28,084. Then he gives the cost of filtration at 080d., which must be added of course?—Yes.

(*Mr. Balfour Browne.*) Then of course the storage would not be so great.

(*Chairman.*) The storage would not be so great, and there would be a diminution all round.

(*Witness.*) Of course, if I may say so, it has not been a matter of great importance to my directors to look so very closely after this waste question in past years, for we have had such a large surplus of water. But now we have been getting up under constant supply to 44 gallons per head, my directors feel that the time has come to go into this question much more closely, and to gradually bring the whole of their district under this system of Deacon's meters.

28,085. Of course we have had very weighty opinions that 20 gallons a head ought to be ample for domestic purposes?—Yes, but of course this system does not restrict the use of water.

(*Chairman.*) Could the other companies furnish us with any tables like this? Has any similar system of waste inspection been adopted anywhere else?

(*Mr. Pope.*) Several of the companies have adopted Deacon's meters.

(*Mr. Balfour Browne.*) The Lambeth Company I know at one time have tested some of their districts with the Deacon's meters, so that I should suppose they could give it to the Commission.

(*Chairman.*) I forget now which company it was who said they found it cheaper to let the water run to waste.

(*Mr. Balfour Browne.*) That was the Grand Junction.

(*Chairman.*) It was said that pumping was cheaper than any inspection of this sort, which involved uncovering their mains and repairing them.

(*Mr. Littler.*) The Kent Company will be able to give you that information for their district.

(*Chairman.*) Very well.

28,086. (*Major-General Scott.*) The East London Company has effected considerable reductions in their water supply, I believe, have they not?—I believe so, but I do not know.

28,087. By the use of Deacon's waste meters?—That I do not know. I do not know how they have effected it.

28,088. (*Chairman.*) This table relates to a population of 50,703 people; your total population is half a million, is it not?—It is 292,000 now.

28,089. At least five times as much?—It is nearly six times as much; it is about a sixth.

28,090. That would bring the saving of water up to millions of gallons per day?—Yes.

28,091. It would be 2,000,000 odd gallons a day in your district?—Yes, nearly 2,000,000 gallons a day—1,900,000.

(*Chairman.*) That is enormous.

28,092. (*Mr. Lewis.*) With the experience you have, have you formed any estimate as to what saving you will be able to accomplish over the whole of your district?—We have not, and for this reason, these experiments have been confined to one class of house, say the 30l. house really. There is a great source of consumption of water not present there what is present in the better class of houses, and that is the automatic flushing tank. That is being put in almost all over our district in the better class of houses, and the quantity of water used by that is, of course, enormous. We have them inspected as quickly as possible. Builders put them up without giving the company any notice, which, of course, they are bound to do under the regulations, and you cannot, as I think, in such houses expect to get the average down to less than 35 gallons.

28,093. (*Chairman.*) I do not quite understand what the automatic flushing tank is?—That is a tank holding a varying number of gallons, sometimes 30, sometimes 50. It fills up gradually. The water comes in through a very small aperture and then automatically discharges its contents into the drains to flush the drains. It goes off generally twice or three times in the 24 hours.

28,094. The whole contents of the tank are discharged?—They are discharged suddenly.

28,095. (*Mr. Mellor.*) Do you make any extra charge for the automatic flushing tank?—Yes, we do.

28,096. How much is it?—It is calculated at 1s. per thousand gallons on the quantity of water discharged by the tank per annum.

28,097. (*Mr. De Bock Porter.*) Do you make that extra charge in very heavily rated houses?—Yes. Of course, when we inspect these houses, we find these things going off every hour very often, and an enormous quantity of water going to waste.

28,098. (*Chairman.*) Going off every hour?—Yes. In many cases the builders set them to go off every hour, and that is no advantage to the drains.

28,099. (*Sir John Dorington.*) Do you mean the tank itself has not been filled by that time or that it is filled too often?—Yes, it is filled too quickly.

28,100. (*Mr. Mellor.*) Do you think that these tanks are necessary, where people have baths and the bath is discharged, we will say, two or three times?—I should think it is very doubtful.

(*Mr. Pope.*) It is a modern fad.

(*Witness.*) It is a mere modern sanitary requirement.

28,101. (*Mr. Lewis.*) Have you any power to stop that or to check it in any way, or have you no control over it?—Yes, that would be held to be undue use of water. It must be used reasonably and we have the power to charge for it. It is not domestic supply.

28,102. (*Mr. Rickards.*) There is one question I should like to be allowed to ask the witness. In your amended estimate of future capital expenditure you have increased the amount for additional storage from 120,000*l.* to 151,000*l.*, have you not.

(*Chairman.*) I believe we have got all the returns of the company put in.

(*Witness.*) Yes.

(*Chairman.*) Then I have nothing more to ask the Chelsea Company.

The Right Hon. Sir WILLIAM HART-DYKE, Bart., M.P., called and examined.

28,103. (*Chairman.*) I believe you have been a Director of the Kent Water Works Company for 12 years?—Yes.

28,104. And have been recently appointed Chairman?—In November last only.

28,105. And we know you represent the Dartford Division of the County of Kent in Parliament?—Yes.

28,106. And you live in Kent, at Lullingstone Castle?—Yes.

28,107. As far as you know, is there any dissatisfaction in Kent with the supply of water by your company?—No. I have heard of none up to this date, none whatever, either as to the quantity supplied or the quality.

28,108. Have the local authorities taken upon themselves the task of supplying in Kent, or have they applied to your company?—No. So far as my experience goes, they appear up to this date to have rather avoided doing so than not. They have been content to leave the water supply in the hands of the existing company. I know of no effort on behalf of any local authority, under the late Act, for water supply. I believe many years ago there was, but I think I need hardly refer to that; I think the local authority in Woolwich did start some scheme of water supply, but it was not put in operation. It was at once handed over to the Kent Company. But that is many years ago.

28,109. Then there does not exist in Kent that strong public sentiment which we have heard of, which desires the water supply to be in the hands of representatives of the people?—No, I have heard nothing of it.

28,110. I suppose I may assume that your directors give close attention to the affairs of the company?—We meet once a week.

28,111. And as we know you are not unprosperous?—We have at length reached what may be termed a great stage of prosperity, so far as our financial position is concerned.

28,112. What is your view as to the purchase of your company by some public authority?—So far as we are concerned, as representing an industrial undertaking of great magnitude, of course, it goes without saying, we do not wish to be disturbed. If we are compelled to part with our property by Parliament, of course, we

(*Major-General Scott.*) I should like to ask the engineer some questions about filtration.

(*Witness.*) Mr. Hack is not here.

(*Mr. Rickards.*) The district engineer is.

(*Witness.*) Yes.

(*Major-General Scott.*) The district engineer is not in charge of filtration.

(*Witness.*) No, he is not.

(*Major-General Scott.*) Then he could not answer the questions.

(*Mr. Rickards.*) We can get Mr. Hack, if you wish it, sir.

(*Major-General Scott.*) I want to ask Mr. Hack some questions on this point.

(*Mr. Rickards.*) We will get him some time after the adjournment.

The witness withdrew.

(*Mr. Pember.*) I am told, my Lord, by at least two other of the Companies that there would be no difficulty in letting your Lordship have the same particulars as to their experience with Deacon's waste meters.

(*Chairman.*) I should be very glad to have it. I confess the results startled me. They seem so prodigious.

(*Mr. Pember.*) After all, it is not so startling as what has been done at Oxford and some other places.

(*Mr. Littler.*) Norwich is even more startling. In Norwich it has been reduced to 15 gallons.

(*Chairman.*) We had some remarkable figures. I know.

Mr. G. H. Gill.

28 Feb. '99

See
29,225-
367;
30,211*a*.

The Right
Hon. Sir
W. Hart-
Dyke,
Bart.,
M.P.

*The Right
Hon. Sir
W. Hart-
Dyke,
Bart.,
M.P.*

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the State, and who also has been connected from boyhood with municipal life—with water supply and other matters concerning municipal life in Wolverhampton. We have the Lord Lieutenant of the county on the board, who represents the county. So far as I am personally concerned, natural modesty, of course, prevents my alluding more to myself, and therefore so far as I am concerned, although my more intimate connexion with the company as chairman is only beginning, as it were, yet I am perfectly certain that if there were to be any failure, as regards our supply, or any possible grievance directly or indirectly to be got up against this company, there are a little over 16,000 electors in the county of Kent who would let me know the reason why at the next election; and, of course, human nature being human nature I am determined so long as I hold this position not to give my political opponents the luxury of any criticism, but I would rather leave them to the gift of their imagination in their attacks upon me at the next election, and give them nothing solid of this kind to go upon. Then, if I may allude for one instant to our officers, we have an engineer who has been connected with the company from his boyhood, and we have a secretary whose experience as secretary goes back 25 years. I think, if you examine him presently, and if you look at the information he has provided you with for the purpose of this Inquiry, you will find that he is not deficient in ability. I must apologise for parading the efficiency of this company, but I do so for the purpose of this argument. I say that until you are driven to the extremest measures it is a hazardous thing—I do not say so on behalf of the company or of the shareholders, I put them on one side altogether—but I venture to urge that in the interests of the consumers alone, and of the public, it is a dangerous thing to upset a business combination such as this, and to put in its place a body of men who, no doubt would be able men, but if you put the destinies of the eight companies under one guidance or one head, whether under purchase or outside control, I say, whichever scheme is adopted, it is a very hazardous thing to upset an industrial machinery and combination such as this, and put in its place a body of excellent men, no doubt, they must be practical engineers, and no doubt it will be a representative body as regards ability; but it will be a new body; it will be an amateur affair, although I do not lay any stress upon the payment of directors for a moment. But then it will be a new body, which can only give one-eighth of its attention to this great district. That is all it will be able to give if it is under a scheme which will embrace the whole area of the eight companies. On the question of policy, therefore, I say on behalf of the consumers I have a strong opinion, apart altogether from appearing here as representing the water company, that it is only under the very last resort and after being driven to the very last extremity, that a scheme of purchase should be entered upon by Parliament. With regard to outside control, I would like, if you will allow me for an instant, to separate that question, because I made a grievous error in the very document which I have placed before your Lordship when I say I do not see why there should be any further control. I am sorry to have inserted that. It was done some time ago when I had not given so much attention as I have done in the last few weeks to the question. Of course, I am strongly in favour of the Bill of the companies for inter-communication, and I shall support every line of your Lordship's report already issued with regard to that. Of course I would like to withdraw that sentence with regard to further control, because I am in favour, obviously, of further control, because I am a supporter of these Bills.

28,114. Do you see any objection to the sort of control which could be suggested for your company which I should think would be this, namely, to have some means of gauging the effect of your pumping. I have not heard from Kent the wails of distress that have reached us from Hertfordshire, but it is suggested that this extensive pumping in the chalk stratum is injuring private wells and private sources of supply?—Yes, it is perfectly true that that suggestion is made.

28,115. Do you see any objection to having your pumps gauged, the rest levels taken, and information of that sort given to the public?—I have discussed this very point with some of my colleagues, and if you ask me my personal opinion, I believe that a company or any other corporate body will lose nothing by giving the

fullest information to the public where there is a strong public grievance. Nothing on earth can be gained by it; and so far as I am personally concerned, though I should be opposed to anything like too close a scrutiny of our works or anything harassing as regards our engineers, yet as regards information to the public which the public has every right to demand with reference to the question of lessening the water in the rivers by the pumping station, I think the public ought to have—in fact I say they must have—all reasonable information given to them.

28,116. Of course, if the Hertfordshire theories are in any way near the truth, they point to something like a revision of the law of underground waters. It is the law that is in fault?—It is a most difficult question, I venture to submit, to deal with.

28,117. Most difficult?—This question of chalk supply is a most difficult question. In the county of Kent there is no doubt that we have enormous reservoirs of water in the chalk if you once tap them. In fact, I have a large water supply on my estate, with 6 or 7 miles or more of pipes and a pumping system, which is supplied in that way. There is no doubt that in the chalk in Kent there are inexhaustible supplies of water if you only tap them. In fact, Mr. Edward Easton, the engineer who put this water supply on my estate, said to me one day—he said it laughingly, and he might not have meant to push it to extremes—“Sir William, I could supply London from the chalk hills on your estate.” That was the expression he made use of to me—meaning, no doubt, that the water supply in these chalk reservoirs is practically inexhaustible. In fact, my own experience of a small well which I use for my estate shows that. This well supplies two large reservoirs which hold 300,000 gallons of water, at the top of a chalk hill. The highest of these is shown on the Ordnance map as 400 feet above the sea, and it commands the whole estate. It is supplied by a turbine put up by Mr. Easton, which is worked by the river, and draws water from the well 100 yards distant. The pumps pump it up to these distant reservoirs, and by gravitation it supplies the whole of my estate practically, farms, and other holdings. Now this is a curious fact. Of course I am personally interested in the depletion of these rivers, for they both run through my estate, the river Cray and the river Darent. I have been watching this well very closely. It is only 18 feet deep, but it has tapped somehow or another one of these chalk supplies. But it does not affect the river. It does not come from the river. If you go down the well, you will see the water trickling in from above; it comes from the hill above, evidently; it percolates through the boulders of chalk into the well. That well stands at 9 feet as its average depth. During the whole of this late drought, during which wells have been dry in Kent which have never been known to be dry before in the memory of man, and although the River Cray has totally failed almost as regards its supply and has been almost dry for many months, this well was never lowered, pumping night and day—never leaving it. Although there was a tremendous stress on the water supply of the estate, pumping night and day, the water was never lowered in that well 2 feet. I have had it tested again and again by a very intelligent man, and 1 foot 9 inches is the most we have ever been able to do with that well in the way of reduction. I hope I am not wrong in referring to this, but I refer to it as a fact coming under my own personal knowledge. If you tap one of these large supplies, they are practically inexhaustible. Therefore I say with regard to this question of the depletion of rivers, I do not think it is a question which should be shirked by the company at all. I think that information should be given, and I have a very strong opinion that going the great depth that we have, it has had very little material effect on the reduction of these two rivers. I have watched them very closely, being personally interested in them.

28,118. (Sir John Dorington.) Do you know what your pumping power is per day in gallons?—You mean with reference to the supply that I am mentioning.

28,119. From this well, yes?—Between 7 and 8 horse-power the turbine is.

28,120. How many gallons?—I cannot give you that. I am sorry I have not got it. The power is only 7 or 8 horse-power, but you can easily understand that during this drought they have been pumping night and day.

28,121. Seven or eight horse-power would pump a lot of water?—Yes.

28,122. (*Major-General Scott.*) When you say that the supply is inexhaustible, of course, there is this limitation, that the supply depends upon the percolation of the rainfall?—Yes, I suppose so.

28,123. There is that limit that it depends upon a certain number of inches of percolation?—I presume the water must come from somewhere.

28,124. (*Mr. Mellor.*) Is it your notion that there is a mass of water moving underneath towards the sea, or do you think that these reservoirs are supplied as Major-General Scott suggests, by percolation simply from above?—I really have not gone into the matter very closely, but from what Mr. Edward Easton explained to me, I understood from him that if you only find them there are enormous reservoirs in the chalk, at a great depth, and that if you tap the springs which come from these reservoirs you would find there a supply which is practically inexhaustible.

28,125. Is it your notion that the springs come from the reservoirs, or that the reservoirs are fed by a constant stream of water which passes under the London clay, and goes to Kent?—I have always thought that perfectly possible, but, of course, I am not an engineer. I have not an engineer's experience, but I have always had an idea that there was a supply under that chalk, that they are not totally filled by the rainfall from above, as Major-General Scott suggested. That has been my own idea.

(*Mr. Littler.*) We shall be able to give evidence on that matter by a skilled witness.

28,126. (*Chairman.*) The reasons you have given us have been very interesting, but they have not been quite directed to the financial aspect of the question. Do you think that there would be any financial advantage to the consumer in the purchase of your company. You say you are paying a 10 per cent. dividend?—Yes, and 4 per cent. for back dividends.

28,127. You have not yet exhausted your back dividends?—No.

28,128. It will not be, therefore, until you have paid the whole of your back dividends that the consumer will get any rebate in your district. On the other hand, if a public authority were the owner of your undertaking, they could devote the whole of the profits (as soon as they have paid their expenses and paid interest on the purchase money and so on) to giving the benefit to the consumer. I do not know whether you have considered the question in that aspect?—Yes, I have, but it seems to me, of course, taking the Kent Company, in 23 years' time, if we proceed as we are now proceeding financially, we shall have exhausted the sum representing our back dividends; that is to say, in 23 years' time we shall have exhausted what represents 4 per cent. now. We are paying 14 per cent.: that is including 4 per cent. in respect of back dividends. Therefore, whatever that represents will go then, of course, into the pockets of the consumers as a rebate after 23 years' time. But with regard to the actual saving, I have not gone closely into the question as to what rate they would pay, but I do not suppose there would be any material advantage to the consumer. Of course, I admit that, with regard to the immediate expenditure, for instance, if it is a question of officers and those engaged in one concern, there would be, no doubt, a saving in the payment of salaries and other matters, but I do not think it would amount to much.

28,129. Do you think the management would be as efficient and economical if it was in the hands of a public authority?—I am not here to say that there are not men to be found in this country who could manage an undertaking of that kind. But still I think there would be a loss to the consumers in the disturbance of what is good as regards management to-day. Now, take the one question of what has been the continuous policy of the company. I venture to say, if you will allow me, the fixed policy especially of our company has been to have regard from year to year to the future supply. The real crux of the whole question, which as I understand you have to decide presently and Parliament succeeding you, is the question of the present and future supply, and I say that day by day and week by week the policy of our board has been not to look to the supply of to-day merely, but to keep steadily on, looking forward to what must be the demands upon us for to-morrow. Now, taking that one

point alone, which is a large point, surely concerning the consumer and a successful water supply, I say that it is better to have men who have been all their lives at the work, who are connected with the district, who know it by heart, who know every pipe and every main in the district, like our engineer does, than to have new men embarking upon it. There is an enormous saving in administration, working for the benefit of the consumer, under a man like that. Then if you put on a new man, only one man, to deal with the whole matter, he has to learn his lesson, and I say whatever that man's ability may be, he surely has to learn his lesson from subordinates and from hearsay and from conversation as to what the demands of this particular district are. By taking away a man who knows it by heart, to whom it is a, b, c, every day before his board, or every week, and putting another man in his place, whatever his abilities may be, I say for many years the consumer will be the loser.

28,130. (*Mr. Mellor.*) Surely you must contemplate the possibility of the purchasing authority employing the same man. Why should the purchasing authority change the engineer?—Then it would be a scheme of purchase under the same administration minus directors. I do not think that is a consideration which ought to come into it at all.

28,131. You would leave the executive?—You would destroy the administrative part of it, and you would have the same officers in that case for the same district.

28,132. You spoke just now as if you apprehended some danger or some risk from purchase, and I wanted to know what was actually passing in your mind?—I think the risk and the danger would arise from disturbing the state of things under which the whole water system is well administered. I am speaking, of course, of my own company.

28,133. (*Chairman.*) Should you see any objection to the other water companies being purchased by some public authority and your company being left out, because you seem to stand in a very exceptional position?—There is no doubt that our company does stand in an exceptional position as regards water supply.

28,134. You are self-contained?—We are self-contained, as it were, and absolutely independent. But it rather puts me in an invidious position to have to answer questions as to the other companies.

28,135. I do not want you to answer as to the other companies. I want you to say whether in your opinion you think your own company would be injured if some public authority bought up the other companies and left you as you are. Would that injure your position at all?—Yes, there would be a difficulty as to that with regard to our pumping stations, which, of course, would involve a very large expenditure. We have eight pumping stations and a ninth in course of completion. Out of these only two are in the metropolitan area.

(*Mr. Littler.*) I think, my Lord, that your suggestion was to leave the Kent Company absolutely alone.

28,136. (*Chairman.*) Yes. Supposing the Kent Company were left absolutely alone, what do you say then?—Does your Lordship mean leave that portion of the metropolitan area in our company as it is?

28,137. As it is?—And leave the three-fourths under purchase?

(*Chairman.*) No, leave your area undisturbed altogether.

(*Mr. Littler.*) Either intra metropolitan or extra metropolitan.

28,138. (*Chairman.*) It is big enough, and if one could lop off any branch of it, it might facilitate the matter. But could you be injured if you were left out of any scheme of purchase by a public authority and only the seven other companies dealt with?—No, I do not think personally it would be any injury to us.

28,139. (*Mr. De Bock Porter.*) Do you know what is the amount of your claim for back dividends?—It is over 900,000*l.* We are paying 4 per cent. now in respect of it, and the estimate is that in 23 years it will be exhausted; we shall exhaust the sum.

28,140. That is assuming you can maintain the 4 per cent.?—Assuming we maintain the 4 per cent.

28,141. (*Mr. Balfour Browne.*) Would you mind telling me how far you go back for back dividends—

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The Right Hon. Sir W. Hart-Dyke, Bart., M.P. what date?—Do you mean when we began to take advantage of their existence?

(*Mr. Balfour Browne.*) I mean how far do you go back? I think you can only go back to the year 1864.

(*Mr. Pope.*) What period will the amount cover you mean?

(*Mr. Balfour Browne.*) Yes.

(*Chairman.*) When was the amount of your dividend fixed?

28,142. (*Mr. Balfour Browne.*) It was fixed, I think, in 1864. (*To the witness.*) Perhaps you would prefer to leave it to the secretary. If so, I will not press it?—The claim goes back to the issues of the respective capitals of the company from time to time. Mr. Dickson will tell you.

(*Chairman.*) We have already had the views of the county of Kent, expressed, I forget by whom I am sure.

(*Mr. Balfour Browne.*) Sir Joseph Leese appeared at one time for the authorities, my Lord.

(*Mr. Littler.*) As regards the question of back dividends, the secretary of the company will put in a diagram showing exactly what the record is in the past and in the future.

28,143. (*Chairman.*) Yes, we will get that from the secretary. (*To the witness.*) We have heard expressed a feeling on the part of the county of Kent that, in the event of the London County Council, for instance, purchasing all the companies, they would wish to have both their supply and their distribution distinct for the county?—Yes, of course, very naturally. The first scheme of purchase of the London County Council appeared soon after their existence, not long, as you are aware, after Mr. Ritchie's Act passed. Therefore, there was of course a natural jealousy, apart from any other reasons with the interference of any outside body, or at the idea of any statutory authority interfering with them. Large sums were mentioned with reference to the scheme of purchase—bringing water from Wales—and there was a natural feeling of alarm on the part of the ratepayers and others—I do not say how well grounded—and a natural alarm in the county generally. At all events, it had not a soothing effect upon the ratepayers. They felt that it might mean a heavier charge on the rates, and, of course, the idea was very unpopular indeed in the county. Your Lordship is perhaps aware also that the county of Kent did promote a Bill for the purchase of all the undertakings in the area belonging to the county of Kent as apart from the metropolitan area, but that, as I understood at the time, and believe now, was a defensive operation on their part. That is to say, they said in effect: If this interfering body is to come into our midst, we at all events appeal to Parliament to let us have our own supply of water from our own wells, and under our own administration. Of course that was a purely defensive operation, and I believe they do not wish existing arrangements to be disturbed at all. I think I may say, as far as the county council of Kent are concerned, they do not wish it to be disturbed at all; and when this scheme of purchase of the London County Council was defeated by Parliament, they dropped this question altogether. I think the fact that they have made no effort since to persevere with their Bill is sufficient proof that they are satisfied with the existing state of things.

28,144. What I wanted to ascertain from you was the feeling of the county of Kent and of the county council of Kent. I suppose you are a member of the county council of Kent?—No, I am not.

28,145. As far as you know, the feeling of the county of Kent would be for independence, both as to supply and as to distribution of water, in the event of the Kent Company being purchased by the London County Council?—Yes, I am confident of that.

28,146. (*Major-General Scott.*) In that defensive Bill that you speak of, who was to control the wells belonging to the Kent Company in the metropolitan area? Were they to be handed over to the London County Council?—I have never read the Bill, and of course I am giving information which I have had from other sources; but I believe from what I know of it that it was purely a Bill to deal with the water and the water supplies within the county area alone, and left outside the scope of the Bill altogether the two pumping stations which I have alluded to, which are in the metropolitan

area, that is to say in the area which is under the sphere of the London County Council.

28,147. What was to be done with these pumping stations in the metropolitan area? I did not quite gather that?—They would be left to the London County Council; they were outside the jurisdiction of the Bill altogether.

28,148. (*Chairman.*) We heard that the agreement between Kent and the London County Council in the event of purchase was never finally settled?—No, I believe not.

28,149. Had you anything to do with that?—No, I had nothing to do with that.

28,150. Then I have no more questions to ask you; but have you anything you wish to say?—I should like to say one word on the general question of purchase, if I may, and on the general policy of it as it stands to-day.

28,151. We shall be very glad to hear you?—I have been listening to a very great deal of evidence for some days, and I should venture to urge that the whole position on the question of purchase has undergone a considerable change even during the time that this Commission has sat. I venture to urge that the whole policy of the future, as it has been disclosed here, under the evidence, and chiefly under the evidence of their officers, has shown that the policy of the companies has been to cover a very large amount of ground, as regards not only present water supply in the Metropolis, but as regards future water supply, or prospective supply, as it is mentioned in the terms of your reference. I think it can be proved, and I think it will be proved, before this inquiry is over, that these companies have shown that their policy is not a standstill policy, but that they have been spending, and are now proposing to spend, a very large sum of money as regards prospective supply. I believe I am right in saying, that if the different sums are added up which the companies propose to spend to absolutely secure a constant supply in the future, they will be found to amount to something like 15 millions of money, of which the company of which I am only a humble member, the Kent Company, proposes to spend a million and a half of money with that object. But of course the sum we propose to spend is nothing like what other companies are incurring, because we have no question of storage to deal with, which, as your Lordship knows, is a very expensive matter. Then, in addition to what the policy of the companies is, as shown before you, I venture to think that the companies themselves have, within the last few days, taken a step which has, I will not say revolutionised the position, but has made an immense change in the position as Parliament has to deal with it to-day. What I venture to say is we want to strip altogether from our minds the cries which have been raised against these companies in the past. I do not suppose any body of men have been better abused for many years since I have been in Parliament, and long before I was a director, than these water companies. There has been hardly any name too bad to call them by; but making full allowance for all that, I venture to think, that the step now taken by the companies with regard to this inter-communication scheme is one of great value for the consideration of Parliament. I believe it is the first time in the commercial history of this country that any commercial undertakings of this kind have voluntarily placed themselves in the hands of a Government Department such as the Local Government Board. I do not believe there is any precedent for it, and I think that the evidence of one or two of my friends has shown that some of them are not quite aware of the extraordinary powers under this Bill which they voluntarily introduced, and which they are placing in the hands of a public department. The department will have almost unlimited powers as regards inspection with a view to secure, not only present, but future supply, and not only inspection but unlimited command of expenditure that is to say, within any possible expenditure which may be sanctioned by Parliament. I believe the Local Government Board, under our inter-communication scheme and the Bill of the Government, as representing your Report, has practically a free hand as regards expenditure, and it may come down upon any company at any moment in their career and say:—"Now, gentlemen, you are not doing your duty as you ought to do; there is a danger here, and there is a danger there, and you must at once spend half a million of money to secure future, that is to say, prospective water supply." Then,

although it is perfectly true that your Lordship in your first Report very properly reserves this Report entirely, *ad hoc*, that is to say, as regards an inter-communication scheme, which is to meet all emergencies, such as the grievous drought of 1898, and of course it is perfectly right, no doubt, that the strongest reservation should be given in that respect; but the other portion of your Report points to a very great change with regard to the position of the companies and the consumers as it seems to me. It says: "In order to satisfy those conditions," that is to say, as regards water supply, "each company becoming a member of such combination"—that is to say, a combination such as under this Bill of the companies—"should either be at the time in effective possession of a supply of water materially larger than would suffice to meet the maximum daily demand of its own district during ordinary years, or else the works necessary in order to furnish such company with a surplus should be included in the scheme of connexion," that is to say, under the pressure of this outside body. Then it says here again: "It is manifestly the duty of every water company to exercise reasonable foresight under expert advice and to provide so far as is practicable against all contingencies which might endanger the continuity of the supply. This implies that, under normal conditions, each company would be in effective possession of a surplus supply." Then it says again: "It is desirable, in our opinion, that the possession by each company of a sufficient surplus supply as above defined should be as far as practicable ensured by a proper system of control." I say not only this Report, but the Bill now introduced by the Government and by the companies ensure, under a very strong outside compelling power, at all events, a constant supply to the water consumers of the Metropolis, because it is obvious that the greater must include the less; and, as is indicated by your Lordship's Report, if the companies are obliged to have such a surplus supply from day to day as to meet any possible emergency which may arise, therefore really this scheme, if it is carried out, does certainly ensure a present constant supply of water; and if you add to that this expenditure I have mentioned of 15 millions proposed by the companies to be laid out as regards future supply, I say, not only for to-day and to-morrow, and the day after, but for many years to come, you secure absolutely under these Bills and under the control of an outside authority a present and prospective water supply. Of course, it may be urged that that does not go the whole distance that Parliament would demand; that Parliament would ask us to go further and secure a water supply, we will say, for this day 40 years or 50 years hence. I venture to say, in regard to that, that before purchase is resorted to, the evidence should be tested to the very utmost which has been given with regard to the question of storage in the River Thames. I will not say it is a waste of money, but I say it would be a wild scheme to my mind to attempt to throw over and cast to the winds this splendid watershed of the River Thames with the extraordinary storage powers which may be secured there, with regard to the future supply of these other companies, which are not, like the Kent Company, so fortunate as to have a self-contained water supply. Of course, these are big questions I know to deal with, but I hope I may be forgiven for having dealt with the matter at some length, but I have given considerable attention to it while I have been sitting here and I have endeavoured to deal with it, not as a partisan, but as having given some attention to the whole of this question. In regard to this question of storage of the Thames, if the water is not there I admit my case breaks down; but I believe that even with regard to the worst years of drought we have ever known almost in this century, such as the year 1898, strong evidence has been given by Mr. Middleton, which shows that the storage power is there—that the raw material is there; and what I submit to your Lordship is this, that if we are to regenerate Egypt at the expense of five millions of money by constructing a certain dam which is to regenerate the whole of the country, it seems almost a slight to suggest that the engineering genius of this country and engineering science cannot find out some means of dealing with this large storage power in the River Thames, and indeed of meeting all the necessities of the case for the next 50 years, and perhaps 50 years after that. Now, I apologise for having dealt with this question at length, but I feel keenly about the question.

28,152. Your last observations are directed against going to Wales, as I understand it?—Yes.

x 98598.

28,153. You think the resources of the Thames Valley with storage are quite sufficient?—Yes, I have endeavoured to consider the question of present and prospective supply, and I venture to submit shortly that what the companies have done in this Bill of theirs, by submitting to an outside authority, and also with regard to the future supply, and what can be done with regard to storage in the River Thames, fills up the remainder of the gap for the next 50 years, and under the pressure of those outside, under the guidance of this outside body, the companies may be depended upon for the future supply.

Cross-examined by Mr. BALFOUR BROWNE.

28,154. I understand that the new departure, upon which you lay so much stress, is this system of inter-communication between the companies?—Yes.

28,155. Are you aware that every one of the companies by their officers came before this Commission and said that they thought it entirely unnecessary, and that at best it was merely a kind of insurance?—I believe that some of the officers of the companies may have.

28,156. Let me read to you what Mr. Hollams said, who is a very good exponent of their views: "Only in the case of such an emergency as calls for the necessity of some such thing. It is only a temporary thing. It is a case which no one anticipates, and which one hopes and expects will not occur. It is merely to meet the scare which has arisen these last few months, and a repetition of any such disaster. Every one hopes that the occasion for it will never arise." Then again he said, "But no one contemplates that the thing will happen here. Everyone supposes that, at all events, in the near future this will be unnecessary—that no company will need this aid. This is merely to guard against accidents, it is not a thing that anyone contemplates will be a means of supplying any particular company. It is only to guard against accidents that it is provided. No company wants it." Now, let me ask you one other thing?—But may I answer that first? I should like to answer one thing at a time.

28,157. Certainly?—I think the language you have just quoted is perfectly natural language to be used by any man where any grievous emergency has occurred such as this drought. I think I have heard it used in evidence given on behalf of the companies, I have heard language very much in that direction; and there is nothing more natural to my mind than that such language should be used. There was a very grievous drought, as I have said here before to-day; wells had been dry that never had been dry before. As to this very East London famine, about which so much has been made, I venture to assure you that the famine has not been confined to East London. In the hills of Kent, Surrey, and Sussex there has been a water famine that has caused the very greatest deprivation, and at this very instant water is now being bought in the neighbourhood of Sevenoaks in Kent at so much a bucket, owing to the wells being dry. Therefore, such emergencies having occurred, it is perfectly natural that legislation to meet these emergencies should have followed, and that language of that kind should have followed these emergencies. What I am referring to to-day has been a very different matter, that is, that owing to this emergency, the companies have for the first time placed themselves in the hands of outside control, a power which is without precedent altogether. They have placed themselves in the hands of the Local Government Board. The Local Government Board is always under the cognizance of Parliament, and can always be questioned by Parliament as to its operations, and I say that for the very first time they have placed themselves under this controlling power, and that has produced a different state of things altogether, that is to say, given an assurance as to the future supply, which did not exist before.

28,158. You said, in answer to my Lord, that you were not a member of the county council of Kent, and, therefore, I have the more confidence in asking, is the Kent County Council a capable body of men?—A capable body?

28,159. Yes; capable of managing a great water concern if it were put into its hands?—I think so; but I think they have a very hard task before them in managing the affairs of the county.

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See 15,425.

See 15,440.

The Right Hon. Sir W. Hart-Dyke, Bart., M.P. 28,160. I suppose all the members of the county council are local men having interests in the county —?

(*Mr. Pope.*) The Kent County Council, you mean?

28,161. (*Mr. Balfour Browne.*) The Kent County Council?—I do not know them all personally. I should think the guiding spirits on the council are certainly local men. I admit that, certainly.

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28,162. There is one other thing I should ask you with regard to the inexhaustible supply. I daresay you have read the Report of Lord Balfour's Commission upon that?—I have read some of it, that is all.

28,163. I will only read you a short paragraph. In paragraph 137 they say, "From the chalk on the south side of the Thames, from the existing wells of the Kent Company, and others which may be sunk within their district, we think that 27½ million gallons a day may safely be taken"?—Yes.

28,164. That does not look exactly like inexhaustible, does it?—No. I have read that, and I noticed it at the time.

28,165. You think more could be taken?—I do.

28,166. How much are the Kent Company pumping from the chalk to-day? I will take it from the secretary, if you do not remember?—15 million gallons.

The witness withdrew.

Mr. A. Dickson.

Mr. ALEXANDER DICKSON called and examined.

28,171. (*Chairman.*) You have been for 25 years secretary, I believe, to the Kent Company?—I have.

28,172. In that capacity you have supervised their business generally?—Yes, generally during that period.

28,173. Upon the main question before us, namely, whether it is financially expedient to purchase your company or not by a public authority, have you any view upon that subject that you can give us?—There is no desire on the part of the company to decline to give the Commission any information which it would desire to have, but of course the question of expediency of purchase for the financial advantage of the ratepayer is a somewhat delicate one for the companies to deal with, inasmuch as in all probability any views they might express upon the subject would doubtless be considered to be tinged with self-interest.

28,174. The proposing purchasers have not hesitated to give us a great number of views?—Quite so. I may say the company is desirous of giving you any views or information which you may desire them to give; but they would prefer to appear as not taking sides upon that question, but rather leave that for the Commission to determine.

28,175. Yes, but we want facts. Can you give us any facts that would tend to show whether or not it would be a financial advantage to the water consumer, if your undertaking were purchased by a public authority? Have you any facts to lay before us to assist us?—The facts for the assistance of the Commission have, I think your Lordship will recognise, been very amply submitted in all the returns of the company which have been made.

28,176. Yes; but I have got you here now before us, and I want you to tell us by word of mouth what your opinion is on that subject, and what facts you can lay before us to show whether or not it would be financially advantageous to the consumer of water that your undertaking should be bought?—As to the point of financial advantage, of course that would depend upon the conditions under which the purchase was made, and the management to which the undertakings were subsequently subjected.

28,177. Let us take those things step by step. You say the condition of things under which the purchase was made; what, in your judgment, are the conditions under which the purchase ought to be made?—Assuming the necessity for a transfer, one can only anticipate that the Commission would recommend the dispossession of the present shareholders upon terms similar to those which have been granted in the principal precedent cases.

28,178. By that you mean, I suppose, arbitration under the Lands Clauses Act, putting it into plain language?—Purchase by agreement, or, in the absence

28,167. I thought it was 15 to 18 million gallons you were pumping?—I do not know what the average pumping is, or what we have done in emergency, but we have pumped up to 18 million gallons.

Re-examined by Mr. LITTLER.

28,168. I should just like to ask one question on that last matter about the Kent County Council. It is the fact, is it not, that that county council have expressed their entire satisfaction with the present position of things?—Yes.

28,169. They said they only desired to change it in case they were invaded by London?—Yes. I am told that is strongly felt.

28,170. There is just one other matter which I will deal with, because I shall not trouble about the opinions of engineers as to inter-communication, which is not worth discussion. Sir Alexander Binnie's answers to questions I will refer to when I speak. With regard to the Report of the Royal Commission, my friend Mr. Balfour Browne has not read the last paragraph 184: "We are of opinion that a large supply of water might be obtained from the chalk area east of the Kent Company's district in the basin of the Medway, and in the district further east, without any risk whatever of damage to that area." That is your view, is it not?—Yes, certainly.

of agreement, by arbitration under the Lands Clauses Act.

28,179. Then do you conceive that an arbitration under the Lands Clauses Act would have a result that would be advantageous to the water consumer; and if not, why not?—Yes, I can conceive the possibility of such a result to the consumer. I can conceive that arbitration could give to the companies all that they equitably should have, and that the administration of the concerns in the future might lead to the advantage of the consumer.

28,180. Then you solve the question against yourself so far as we are concerned?—I scarcely see how against ourselves.

28,181. I mean in favour of purchase. If purchase, giving you all that you can equitably claim, results in an advantage to the consumer, that is the main question we have to answer?—I say it may result in an advantage to the consumer depending upon the administration, and, of course, upon the price given. I assume that a fair price would be given; and as these concerns are all substantial and successful undertakings relatively, of course, according to their degree (I think that is a fair description of the whole of them), I assume that the property would be as substantial and as remunerative in the hands of any other body who managed it upon similar lines.

28,182. (*Sir John Dorington.*) Given effective administration as good as you have at present, and fair terms of purchase, you think still the consumer might get some advantage?—I think it might result in that way.

28,183. (*Chairman.*) That is to say that the consumer would get a rebate on his charges earlier from a public authority purchasing than he would get it from your company if it continues in existence?—The question of rebate would depend entirely upon the future and the future administration.

28,184. (*Mr. Pope.*) And the price paid?—Of course, and the price paid.

28,185. (*Chairman.*) We are assuming a fair price paid; we are assuming the price that you think the company ought to receive. I understood you to say just now that you thought it possible that, even if a fair price were paid for your undertaking, a public authority purchasing, might give benefits to a consumer beyond those that you give yourself. That is what you have told us at present?—I do not know that I put it quite in that way, as to giving the consumer benefits beyond those that we are giving him now.

28,186. That is the whole point. I ask you if you did not say that, I do not know what you did say. Please tell us, in your own way, what you did say?—I think my answer was confined to this: that a purchase being made upon equitable terms and administration being

a sufficient and economical as at present, that advantages might accrue to the consumer from purchase.

28,187. Then you mean to say he would get a diminution of his charges earlier than you can give them?—I do not say earlier.

28,188. What would the advantage be to him then? You say some advantage would result to the consumer, what advantage—

(*Sir John Dorington.*) Would it be more economical management, equally effective management, but more economical?—I do not think the management could be more economical. Speaking for my own company, I am positively sure that the undertaking of the Kent Water Company could not be more economically managed than it has been, and is being managed.

28,189. Then out of the management of the company no advantage could accrue to the consumer?—I do not think *quâ* economy of management any advantage could accrue to the consumer with regard to the Kent Company.

28,190. By a fair price, I suppose, you mean that the present shareholder and investor in the company would receive at least as much money in the future from his new investment as he has in the past?—Certainly.

28,191. Then where is the middle position out of which the consumer is to get the advantage? As much money is to go to the investor as at present, as great a cost will be incurred in the management as at present, and where is the money to come from which is to give an advantage to the consumer?—It would be, of course, only such an advantage as would accrue from an unification.

28,192. What is the advantage from unification if the expenses are to be as large under unification as at present? I understood you say there would be no saving—Yes.

28,193. Would there be a saving by unification, that is the question which is really asked of you?—In speaking of unification, I had in my mind rather such advantage as might be derived from the federation which is being adopted by the companies for instance, *quâ* the Staines Reservoirs. Of course, I am connected with my own company, and I am not concerned in the administration of the other companies, and therefore I do not presume to speak from that point of view with regard to their undertakings.

28,194. (*Major-General Scott.*) The price of purchase would include the value to the seller, present and prospective, would it not?—It should include those values.

28,195. So that the purchaser has to start with that load on him—the cash value of those present and prospective advantages?—Yes.

28,196. And he has to make something else besides out of it, according to your assumption?—That is so.

28,197. (*Chairman.*) And he has to make enough out of it to pay what every public authority must pay, namely, a sinking fund?—Yes.

28,198. Then where is the advantage to the consumer to come in?—If you say to make enough out of it to provide a sinking fund, I do not know that I should look at it quite in that light. I look at the sinking fund as a matter of thrift, and I think it does not affect the question.

28,199. Yours is a thrifty company, but you do not set up any sinking fund—you are not obliged to?—No.

28,200. On the other hand, the public authority, the purchaser, would probably be obliged by Parliament to start a sinking fund?—Yes.

28,201. And they would have to get the money for that sinking fund from somewhere?—Yes, they must.

28,202. Where would they get it from, except from the consumer?—Precisely, they would get it from the consumer, as Liverpool and Manchester gets it.

28,203. Or from the ratepayer?—But what I say to your Lordship is this, that I do not think the question of forming a sinking fund should be, as it were, put against the companies' undertakings which are to be purchased as a matter of loss, or a matter of gain. I look upon it that the sinking fund contributions in this case are like the extra payments which would be made by a thrifty young couple, who instead of paying rent to the landlord, determined to buy the house, and to pay the small additional payment which they would

have to make for the loan which they obtained in order to buy the property.

28,204. But if that thrifty young couple do that, they will have so much less to spend in Christmas presents for their friends?—Possibly, but they will have a property by-and-by of great value.

28,205. Yes, by-and-by, in 60 or 80 years, they will have that property of great value?—Yes.

28,206. But where is the benefit to the consumer to come from if the purchaser has first paid the full value of present income, the full value of the prospective income of the shareholder, a sinking fund upon his purchase money, and there is a management not more economical than the present management: where is the benefit to the consumer to come from?—In answering your Lordship's question, I assumed that the benefits would be from the administration.

28,207. But is the administration going to be so much better and cheaper than your present administration?—I can only say if it can be, that might be a possibility.

28,208. But is it likely do you think?—I do not think it is likely to be.

28,209. Then you say the management is not going to be more economical?—I think not.

28,210. Full value of present and prospective income paid, extra expenses of sinking fund. Where is the benefit to the consumer to come from?—Only in the way in which I have suggested.

(*Chairman.*) I have not caught it—I wish I could.

28,211. (*Mr. De Bock Porter.*) Do you think the consumer would make any profit in buying up the back dividends under discount?—I think we ought to be given the full present value of these back dividends.

28,212. (*Chairman.*) Then the purchaser would be buying a deferred annuity. Although he would be recouped ultimately in the 23 years which it would take you to repay your back dividends, for the first half of those years he would be out of pocket again on that score?—He would have the additional income coming in to meet it.

28,213. Paying down the present value of a deferred annuity is a loss in the first years, is it not, unless you have altered the rules of arithmetic in Kent?—Yes, if the compensation were to be paid down in cash, in that way it would be so.

28,214. Of course it has to be paid down in cash. You have advocated a settlement under the Lands Clauses Acts, and that means payment down in cash. Perhaps we had better pass from that subject. You say you think that the settlement of the purchase money ought to be under the Lands Clauses Act?—Distinctly.

28,215. That means payment in cash?—It may not possibly mean payment in cash.

(*Mr. Balfour Browne.*) It is agreement or arbitration, so that of course it would be competent for people to agree for payment in any other way.

(*Chairman.*) Yes.

(*Witness.*) It did not mean it in the Middlesborough case.

28,216. (*Chairman.*) I see you have got a list of purchases of undertakings by municipal authorities where the payment has been by perpetual annuities?—Yes.

(*Chairman.*) That must have been by agreement. No arbitrator awards perpetual annuities, I presume; he could not under the Lands Clauses Act.

(*Mr. Balfour Browne.*) There have been special clauses in some Acts giving that.

(*Mr. Pope.*) They may be commuted; that is generally the case. It was so in the Middlesborough case.

(*Witness.*) The principle of annuities has generally been referred to in the Acts.

28,217. (*Chairman.*) Yes, but what is the object of this table that you have had printed, of cases where perpetual annuities have been given?—The object was this. It has been given in evidence before the Commission that there are 64 county boroughs in England and Wales—

28,218. The 64 boroughs in England and Wales have done what?—Of those boroughs 32 have acquired the undertakings by purchase from the companies; 12 have

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constructed their own works; 19 are supplied by companies; and one is supplied by another authority. Of those 32, in 16 cases the compensation awarded has been by perpetual annuities: The cases that I refer to are Blackburn, Bury, Exeter, Leicester, Chorley with Liverpool, Manchester, Newport, Nottingham, Oldham, Reading, Rochdale, Birmingham, Salford and Wolverhampton.

28,219. (Mr. Pope.) Salford takes its water from Manchester?—Then there is Liverpool, Middlesborough, Edinburgh, Dundee, and Glasgow. Middlesborough was the case where the principle of annuities was laid down in the Act.

28,220. (Chairman.) Do you leave out Scarborough?—And Scarborough.

(Sir John Dorington.) Scarborough is not a county borough, I think, and the witness has left out Haslingdon.

28,221. (Chairman.) Neither Haslingdon nor Scarborough is a county borough?—No, Haslingdon went with Bury, I think.

28,222. What am I to infer from that; I mean what does this point to? I do not follow?—That the principle of compensation by annuity has been established by all these precedents.

28,223. But you are for the principle of compensation by cash?—No, I have not expressed such a preference.

28,224. Then you do not care whether it is by cash or perpetual annuities?—It all depends of course upon what the cash payment is.

28,225. Of course it must?—As a matter of convenience or preference, the principle of annuities is far preferable to that of cash.

28,226. You mean you think it preferable for the seller?—It is preferable for the seller.

28,227. Do you think it preferable for the purchaser?—I think it convenient for the purchaser.

28,228. Does it not deprive the purchaser of any advantage he may get from the fact that he can borrow money at a cheaper rate than the rate on which his water income is calculated?—No, I do not think it deprives him of that.

28,229. Surely. I suppose you would put your water income at an income that might be fairly valued upon the three per cent. table?—Yes.

28,230. Or perhaps even higher? Therefore, the cash value of that income would be calculated upon the three per cent. table?—Yes, if the compensation were in cash.

28,231. Now suppose there was a public authority having credit enough to borrow that sum of cash at 2½ per cent.; the public authority would obviously save a half per cent. in the transaction by paying cash?—Yes, it might do so.

28,232. Then where is the advantage to the purchaser in giving a perpetual annuity at three per cent. instead of that?—The advantage to the purchaser would come in in the mutual arrangement which the perpetual annuity affords the opportunity to adopt.

28,233. I am in despair. Now I see you have also got a list of municipal authorities who have taken over the mortgage debentures. What is the interest or the value of that—what does it show, what does it prove?—That was intended to support the position that in these cases the general practice was for the purchaser to take over the mortgage debts and debenture stocks as they stood.

28,234. I have not heard that disputed by anybody in the course of this long inquiry?—I do not remember that it has been suggested to the Commission, but it has been suggested through the Bills of the London County Council to deal otherwise with debenture stock. Before passing from that list of boroughs where the waterworks have been acquired, may I refer to the references which have been made to the payment in cash, and point out that in the Middlesborough case, under the Act the compensation was to be in perpetual annuities or at the option of the company in money; and that in Birmingham it is at the option of the annuitant to take anything else than his annuity for his holding.

(Mr. Littler.) Both Birmingham and Middlesborough were Lands Clauses Act purchases.

(Witness.) That is quite right.

(Mr. Littler.) But the mode of paying the money was special.

(Mr. Pope.) There was a special clause in the Middlesborough Act that the compensation was to be taken in annuities or cash at the option of the buyer.

(Mr. Littler.) That was only as to the method of payment, but I want to point out that they were both under the Lands Clauses Act.

(Mr. Pope.) It was not ascertained under any Act.

(Witness.) No, there was no arbitration at Birmingham.

(Mr. Balfour Browne.) It merely says it is done by annuities. All those that are referred to were agreed.

(Witness.) My object in referring to that was to show that the option was not with the purchaser, but with the seller, as to whether he would take anything else than his annuity in those cases.

28,235. (Chairman.) As to whether he would take cash or an annuity?—Yes.

28,236. Do you suggest that those ought to be the terms upon which the water company should be purchased by any public authority?—I say if the payment is to be in cash, it ought to be at the option of the shareholder, but that the shareholder should in any case receive an equivalent income, as the honourable Member puts it, for his present income and his prospective value; and that should be assured to him in the form of a permanent annuity.

28,237. What are the other securities in the market that you would consider equal to the shares, say, of the Kent Company?—Consols, and the very highest class of debenture stock.

28,238. Do you mean railway debenture stocks?—Yes, the very highest class of debenture stocks.

28,239. Do you mean you consider your Kent Company's shares as equal in the market to debenture stocks of railways?—Practically—almost.

28,240. (Mr. De Bock Porter.) Have not recent transactions taken place on the 3½ per cent. basis?—Do you mean, have sales been effected at a rate which would pay the investor 3½ per cent?

28,241. Yes?—Certainly.

(Chairman.) I do not know I am sure what 3½ per cent. securities there are in the market.

(Sir John Dorington.) First class railway stocks.

28,242. (Mr. Lewis.) I suppose that there is no well secured income on ordinary shares like the shares of the water companies?—No.

28,243. That is, that there is no income that fluctuates so little as the income derived from the share capital of the water companies—I mean share capital?—That is so. For that reason the share capital of my company is in great request by trustees and others.

28,244. (Chairman.) Trustees cannot, without special powers, buy your shares?—Shall I say by large financial undertakings? A very large proportion of the stock is held by trustees. I have taken the trouble to ascertain, within the last few days, somewhat of the fact as to the proportions in which the stock is held. It is difficult to know whether the holders are trustees or not, because the company is not concerned in trusts, but in nearly all cases where the holding is a trustee holding, it is in the names of two or more persons, and 42 per cent of the original capital of the company is held by two or more persons in joint accounts, and 33 per cent. of the other stock is similarly held.

28,245. Of the stock that has been created since?—Yes, of the 7 per cent. stock—the new stock. I know of one instance in which 25,000l. of the company's stock is held by a very large financial undertaking, and I know another instance where 20,000l. of the stock is in the hands of executors for beneficiaries.

28,246. (Mr. Lewis.) I suppose your stock is held very largely by insurance companies?—Yes, it was one such that I referred to. Of course the price at which the stock stands to pay an investor now (which is what the honourable Member has referred to) is governed very much by the payments on account of back dividends.

28,247. (Chairman.) In fact, an investor now gets 14 per cent.?—The investor is paid on the original stock 14l. in respect of each 100l.

28,248. That is 14 per cent., is it not—that is the common phrase?—It is on what he has invested.

28,249. A man who buys a share to-day has to pay 366l. 10s. for it?—Yes.

28,250. And he gets 14 per cent. on 100l.?—He gets 14l. upon his 366l. 10s.—that is my point.

28,251. On the nominal value of his share?—Yes.

28,252. That is a little over 3½ per cent.?—Yes.

28,253. Can you tell me any security paying 3½ per cent. that you consider as good as your Kent Company's shares?—Before I answer your question, may I just supplement—

28,254. But please answer it first?—I do not. Of course there are good securities in the market, but if you remove the water stocks from the market, those good securities will be appreciated immediately by the enormous demand that will arise from those who, if they are paid in cash, would have to put their money into something.

28,255. I want you to give me an idea what securities you consider as good as your Kent water shares that pay 3½ per cent.—

28,256. (*Mr. Lewis.*) Would you say the London and North Western Ordinary Stock?—I have not the Stock Exchange List before me; and I have not considered the matter with a view of giving evidence on it.

(*Mr. Littler.*) Four per cent. out of that 14 is dependent absolutely on the profits of the year. It is not like a railway stock which will go on paying the same year after year. Unless the net profits have been more than 10 per cent., there is nothing to divide. It is contingent on profits, and it ceases at the end of 23 years altogether.

(*Chairman.*) Yes I know that.

(*Witness.*) That was the very point that I asked permission to supplement just now.

28,257. (*Chairman.*) What is it you want to supplement—please go on?—The answer which I desired to supplement just now was to explain the reason why the Kent stock is purchaseable in the market to pay the investor from 3½ to 3¼ per cent.; it is because part of the annual income paid is in respect of back dividends, and that the payment for back dividends depends upon the period at which the profit is sufficient to discharge them; and that of course will affect the period over which that additional payment will continue.

28,258. (*Mr. De Bock Porter.*) Four per cent. of your dividend is really only a terminable annuity?—Precisely. That 4 per cent. will continue for 20 or 23 years other things being equal, assuming that we progress at the same rate.

28,259. (*Chairman.*) I was trying with your help, if I could, to see what a shareholder in your company purchased by some public authority could do with his money, and therefore what amount of money he ought to get in order to be placed in the same position. As I understand you, you think first-class railway stocks are as good, as far as security goes, as your Kent Company's shares?—There are a number of high-class stocks—railways and other things.

28,260. What other things—take gas?—If I had the Stock Exchange List here, I might look at it, and suggest it in detail, but I have not.

28,261. But if you have not thought about it, I will not trouble you, of course. What you consider adequate compensation to the seller must depend upon that—namely, upon the price at which he can get an equally good security to give him the same income?—Precisely.

28,262. Therefore it must depend upon the consideration of the equally secure stocks there are, paying an equal income?—Yes, and however many there may be, the result of withdrawing the water stocks from the market, and liberating a large capital for re-investment must be to appreciate those other securities very enormously.

28,263. (*Mr. Lewis.*) Do you know of any ordinary stock where the dividend is so well secured as the stock of the water companies?—I hold some of the stock of the water company myself, and I do not know any other stock into which I should desire to change for that reason.

28,264. But do you know of such a stock where the dividend is so well secured as the dividend of a water

company?—I do not know any class of stock where the dividend is more secure.

(*Mr. Lewis.*) In fact there is none.

28,265. (*Chairman.*) You say there will be an appreciation of all good securities by reason of the large amount of capital thrown upon the market?—Yes, of cash.

28,266. On the other hand, your purchaser will have to issue some, I do not like to mention a figure, but a good many millions of new stock, upon which he has raised the money to pay you cash, which will be seeking purchasers and investors?—Precisely.

28,267. That will be a very good and secure stock, because it will have the security certainly of the water rates, and possibly also of the public rates besides?—Yes, and being in the hands of the purchaser to issue, all those things would doubtless be taken into consideration, and the offer of that stock to this liberated cash would doubtless be made on terms which would be not advantageous to the seller of the water stock.

28,267a. (*Chairman.*) I do not know quite why that should be the principle?—The liberation of 40 millions of money at a moment on the market the purchasers having to go for a loan would give them a great opportunity of getting it at a much lower rate because of the difficulty of the seller in finding other investments to take the place of his water stock.

28,268. (*Sir John Dorington.*) Would the purchaser find it so very easy to raise 40 millions immediately? Would not that have the effect of depressing all stocks—a 40 millions loan put upon the market?—Of course the purchaser, if he had bought the water undertakings, would have those as an additional security for him to go to the market with.

28,269. He would have his security?—I am bound to say that.

28,270. But really, it is what would be the effect upon the market of a great transference of securities—40 millions worth issued on the one side, and 40 millions to be paid for on the other?—That would depend upon the view which the market took of the added security of the borrowing body.

28,271. It would rather depend upon the opinion of the market on the transaction than than upon either the seller or the buyer—rather than upon the desires of the purchaser or of the seller?—It might possibly be so—it would probably be so.

28,272. (*Chairman.*) The action would be just the same. They would be equal in both directions. If there are 40 millions cash set loose and seeking investment on the part of the seller, there are 40 millions being sought by the purchaser?—Yes, that might be so. It would be so in the case as you put it, but then I say that the seller in that case would be at a considerable disadvantage, because the other good stocks in the market would be appreciated, and he would have to pay something more than the ordinary, and so lose part of his income in the purchase of those appreciated stocks, and very likely the difficulty of finding an investment would be so great that he would have to take the London County Council stock at a reduced rate, in order to get into anything at all.

28,273. (*Major-General Scott.*) Do you think the London County Council could put the minimum rate of purchase at a higher figure? Is that your view?—Yes.

28,274. In consequence of the knowledge that there was this demand?—Yes.

28,275. (*Chairman.*) But it strikes me that their operation would have to come first—they would have first to put 40 millions into their pockets by a loan issued, and then come to the sellers of water shares with it, and say, Here is your money, gentlemen?—Yes.

(*Sir John Dorington.*) They would have depressed the market by getting 40 millions into their treasury. In fact, it would be a big disturbance.

(*Mr. Littler.*) I believe even the British Government has never borrowed 40 millions of money at one time.

(*Witness.*) It would be an enormous disturbance in cash.

28,276. (*Sir John Dorington.*) And the effect of disturbance is generally to lower values, is it not?—Yes.

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Mr. A. Dickson. 28,277. Therefore, first-class securities would fall?—If the seller has to re-invest his 40 millions, then the first-class securities must go up, I think.

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28,278. (*Chairman.*) Yes, but do not you see there would have been 40 millions of a first rate security issued before the seller ever came into the market at all. The London County Council, if they are the buyers, must have raised their 40 millions and issued 40 millions of stock upon the market before they come to you with the cash to pay you?—If such a transaction could be carried out—

28,279. But is it not so?—Do not let us have any "ifs." If the London County Council bought the undertakings of the water company, they must come to you with the cash in their pockets in order to pay you off?—Yes, at a particular time.

28,280. Then they must have raised that cash?—Yes.

28,281. Then they must have issued securities to the tune of forty millions, or whatever the number of millions is?—Yes.

28,282. And those millions would be on the market, and would have depreciated, probably, the price of other first-class securities?—I should assume that the interval of time between the raising and the payment would be so arranged that a great disturbance would be moderated.

After a short adjournment.

28,283. (*Chairman.*) I do not know whether you have considered the arbitration clauses that the London County Council have proposed from time to time?—I have necessarily seen them.

28,284. Have you anything to say about them?—Those clauses seem to be directed to the object of altering the existing law as to arbitration, for the special advantage of the purchaser. In that sense they are not equitable. In support of that opinion, that they are put forward with the object of altering the existing law for the benefit of the purchaser, I would refer to the answer given by Mr. W. H. Dickinson, Question 4863, in which he candidly said that: "The chief reason of our anxiety for having a special clause has been because the arbitrator would say Parliament has intended me not to operate as under the Lands Clauses Consolidated Act." I may also remind your Lordship that when the County Council Bills were before the House, a very authoritative statement was made by the Chief Secretary for the Colonies, in reference to that very point. In the course of his speech Mr. Chamberlain said—

28,285. Speech, when and where?—This was a speech made on the 24th March, 1896, on the Second Reading of the Water Bills of the London County Council.

28,286. In the House of Commons?—Yes. He said: "I say that even at the eleventh hour I believe an agreement might be come to, if the London County Council would frankly agree that the Government Bill should go on and without opposition, on the understanding that the ordinary Arbitration Clause should be put in, and with the understanding at the last stage that the new water trust shall be substituted for the London County Council." Then later on he said, in the same speech: "If they say"—that is, the London County Council, whom he accused of blocking the way to a settlement—"we will not have a settlement unless you enable us to extort terms which have never been asked for in any previous case by a municipal authority," or say, "we will not deal with this matter unless you make us absolute master of the conclusions at which the water trust or authority will arrive"—then they are asking terms so exorbitant and unreasonable that they could not be conceded by the Government or the other interests concerned. But, if they were willing to accept the arrangement offered by my Rt. Hon. Friend, we might, even now, maintain these Bills, and by the end of the session the new water trust would be constituted with full power to carry out an amicable arrangement with the companies or to go to arbitration."

28,287. Was that on Lord James's Bill?—It was on on the purchase Bill of the London County Council.

28,288. What was the Government Bill alluded to?—The Government Bill alluded to was a Bill which was introduced into the Upper House by Lord James.

(*Mr. Pope.*) The Government Bill alluded to was Lord James's Bill, but the speech was made on the second reading of the London County Council Bill.

(*Witness.*) To be explicit, it was on the Second Reading of the Chelsea Water Transfer Bill of the London County Council. With reference to the alteration of the existing law, may I also bring to your Lordship's notice an observation or remark of Sir William Harcourt in August 1893, in reply to a deputation that waited upon him on this question of the London Water? He said "I cannot, myself, accept the proposition that you could deal with the water companies or any other person by simply repealing their rights and making their rights what you choose them to be." That is with reference to the proposal to alter the existing law to meet special purchase.

28,289. The deputation was about what?—The deputation was on the subject of the acquisition of the London Water Companies by a public authority.

28,290. Have you any evidence to give us about the question of the Quinquennial Valuation and the alteration of rateable values?—Yes, I have some statistics.

28,291. Have you got a summary of the increases and decreases of water rates upon the alteration of the rateable values by local authorities from the year 1887 to the year 1896?—Yes.

(*The witness handed in Table. See Appendix S, 2.*)

28,292. Do I understand that this table that you have now put in includes the whole of your district?—The metropolitan portion, not the outside.

28,293. I beg your pardon; of course the quinquennial valuation only applies to the metropolitan portion?—Yes, I thought it desirable to submit this table to you.

28,294. The result of it is that the decreases of valuation are higher than the increases?—That is so in the 10 years from 1887 to 1896. In that period the number of alterations of water rates consequent upon alterations of the rateable value by the local authorities was 25,728.

28,295. (*Mr. Littler.*) Increases?—Increases. The number of cases in which the water rate was required to be decreased upon such alterations of rateable values was 23,650, making a total of 49,378 alterations. The amount of the water rates increased upon those alterations was 4,400*l.* 2*s.*, and the amount of the water rates decreased was 4,769*l.* 13*s.* 7*d.*, showing as a net result on that decade, a decrease of 369*l.* 11*s.* 7*d.* per annum on those alterations.

28,296. (*Chairman.*) Do I understand that those water rates in the last two columns of your table, are the water rates in respect to the houses on which the rateable value was altered, either by way of increase or by way of decrease?—The sums in the last two columns represent the alterations made in the water rates, not the water rates on the houses themselves.

28,297. (*Mr. Pember.*) The differences either above or below?—That is so.

(*Mr. Littler.*) It is the result on the water rate of the increases or decreases of rateable value.

28,298. (*Chairman.*) Those are changes in the water rates that you actually charge, and not in the rentals upon which you made your water rate?—These figures represent the change in the water rate, not in the value.

28,299. I see that each quinquennial valuation does produce a great jump [up] in the water rate?—Yes it does. You will notice in column No. 2 that in the preceding years of the quinquennium the number of cases decreased greatly exceeds the number of cases increased.

28,300. I see that, but I was only going by steps at the moment. At the quinquennial list alterations there is a great rise in your water rates?—Yes, there is.

28,301. An extraordinary rise?—There is a rise.

28,302. But in the intervening years there is a considerable decrease?—A great decrease.

28,303. That arises from the changes in the assessments that take place from year to year?—By the assessment authorities.

28,304. By the parochial authorities?—Yes.

(*Mr. Balfour Browne.*) There is a pulling down in those cases because the supplemental list is only allowed where some alteration takes place after the quinquennial.

* The witness subsequently informed the Commissioners that the date of the speech of Sir William Harcourt to which he referred should have been given as July 31st 1883.

(*Witness.*) No.

(*Mr. Balfour Browne.*) Yes, indeed.

(*Witness.*) The effect is this:—In the first four years of the quinquennium all the ratepayers who can make out a case for a reduction in the assessments of their property naturally submit them to the assessment authorities and their applications are considered and the results effected in supplemental lists during that period. Your Lordship will see that it is scarcely human nature that a man should go to the Assessment Committee in the four years of the quinquennium and say, my property has gone up in value. Therefore in those four years the ordinary increase in the value of properties is not recorded, but when you come to the quinquennium, then each ratepayer is required to make a return to the authorities and upon the returns then made as to value the revisions are made throughout both upwards and downwards.

(*Chairman.*) Do you mean that in the interval between one quinquennial valuation and the other where the premises have not been altered at all the parochial authorities have power to decrease the assessment.

(*Mr. Balfour Browne.*) No, my Lord, they have none.

(*Witness.*) Not where they have not been altered at all.

28,305. (*Chairman.*) Then what is the value of this table? Does not this table represent unaltered premises?—No; this table does not deal with unaltered premises, it only deals with those premises where the rateable value has been altered.

28,306. I am not speaking of rateable value at this moment. It is one thing to raise the rateable value upon exactly the same premises as were in existence at the previous quinquennium, it is another thing to put a fresh value upon new premises or upon altered premises; does this table represent unaltered premises or does it represent all premises, whether altered or not altered premises, mind, not altered rates?—It represents altered premises at the quinquennium.

(*Mr. Littler.*) I think, my Lord, you will find if this summarises what it ought to summarise, and I believe it does, that it is this that during the quinquennium there must be an alteration not expressly in structural value, but there must be some alteration in the value of the premises since the last quinquennium, otherwise it is assumed to stand. But at the quinquennium there is a new valuation throughout and then all alterations whether by reason of structural alterations in the premises or alterations in value are all shown. This purports to show and I believe does show all the alterations that have taken place whether they are due to structural alterations or to pulling down.

(*Chairman.*) Then I come back to my old question, Is there any power in anybody in the interval between one quinquennium and another, to change the rating of premises which have not been altered structurally?

(*Mr. Littler.*) Yes, my Lord, structural alteration is not necessary if there has been an alteration of circumstances, to put it shortly.

(*Chairman.*) What do you mean by circumstances?

(*Witness.*) Rent value.

(*Mr. Littler.*) It was held by Mr. Justice Field—as long ago as that—that it need not be a structural alteration, but if there has something happened, for example, suppose a new street had come, which had doubled the rateable value, then the overseers would be justified in doubling it if they thought it would let for more from year to year.

(*Sir John Dorington.*) Supposing the overseers knew there was a new tenancy and the old tenancy was 150*l.*, and the new tenancy 200*l.*, could they, in the interval between the quinquennium, alter it?

(*Mr. Balfour Browne.*) I think not—

(*Mr. Littler.*) I have been arguing on a question of appeal against my friend, Mr. Balfour Browne, on that point, and the Court of Queen's Bench has held that, and it is now going to the Court of Appeal. I should say that if it turned out that there was general alteration in the neighbourhood justifying that, it could be clearly done.

(*Mr. Balfour Browne.*) I will give your Lordship another case that was decided in the Court of Queen's Bench recently, where a large premium, I think it amounted to 16,000*l.*, had been paid after the quinquennium for a public-house. It was held that the

sessions were justified in taking that into consideration on the supplemental list, although there had been no structural alterations on the premises.

(*Mr. Littler.*) I quite agree.

(*Sir John Dorington.*) That would accord with what I have suggested, would it not, Mr. Balfour Browne?

(*Mr. Balfour Browne.*) I do not think that a mere change of tenancy would be sufficient.

(*Mr. Littler.*) If, on the other hand, some abominable nuisance which could not be indicted or suppressed, say a man keeping a rag and bone shop next door, happened, which sent down the letting value of the premises between the two quinquennial valuations, and a new tenant had to come in by reason of the premises being vacant, then the occupier would be perfectly entitled to say—yes, this let at 50*l.* before, but it is only worth 25*l.* now. Any real satisfactory alteration is enough.

(*Mr. Balfour Browne.*) It is a very difficult subject, my Lord. Only the other day, where the London Dock Companies had shown a considerable increase in their receipts, it was held that that was not a sufficient ground to put them into the supplemental list.

(*Mr. Pope.*) But you seem to agree that it need not be a structural alteration.

(*Mr. Balfour Browne.*) Not absolutely.

(*Mr. Littler.*) And if there has been a continual decrease, it has been held by the Court that that would be a ground.

(*Chairman.*) This table shows an enormous decrease between one quinquennium and another—a decrease of thousands.

(*Mr. Balfour Browne.*) Really, I think that means where premises have been pulled down, and have gone out of the valuation altogether.

(*Witness.*) No.

(*Chairman.*) If you have the table before you, Mr. Balfour Browne, you will see that the decreases have been 2,554*l.*, 2,309*l.*, 2,132*l.*, and 1,145*l.*

(*Witness.*) May I add for your information, that it is the practice of the parochial authorities in our district where a new tenancy occurs, if there be a reduced rent, to alter the assessment of the rateable value in any year of the quinquennium, according to the facts of the case.

28,307. (*Mr. De Bock Porter.*) What relation does this total of 49,378 bear to the whole number of tenements that you have?—The total number of our houses in the Metropolis in June 1898, was 63,137. This return relates to 1896; that I think is the nearest answer I can give to the honorable Member.

28,308. (*Chairman.*) You cannot give the number of houses in 1896?—Not precisely; they were not counted up to that date.

28,309. (*Mr. Pember.*) It hardly bears upon the financial aspects of purchase?—No, it bears upon the allegation which has been made that the increased and increasing values, which under the Metropolis Valuation Act are every five years, placed on London property is accountable for the growth of the company's income. That was very explicitly stated.

(*Chairman.*) It is a little far off, but the way in which it has been put is this—do not understand me as affirming anything that I say; I am only repeating:—“You pledged yourselves to Parliament that what you got from the percentage charge on rateable value should not exceed your own old income, but you have, by the effect of the quinquennial valuations, got a grossly excessive income beyond what you used to receive formerly, and that for no further service rendered; that we do not say is an illegal income, but it is an inequitable income, and ought to be taken into account”—as I understand, but there I am a little in the dark—“by any arbitrator when he is assessing what your real, just, fair income is.”

(*Mr. Pember.*) Is your Lordship referring to the supposed pledge of 1852?

(*Chairman.*) I was partly referring to that, but I have partly in my mind the contradiction and the explanations.

(*Witness.*) May I draw your Lordship's attention to the fact that we were not there in 1852, and were not parties to that, and this scale has come into existence since 1864.

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(Chairman.) Do not trouble your head about these matters.

28,310. (Mr. De Bock Porter.) The whole increase in the profits of your undertaking have come from additional supplies?—Certainly.

28,311. And not from re-valuations?—No, you see the re-valuations have brought us a loss during those last 10 years.

28,312. (Chairman.) This table is confined to the metropolitan part of your undertaking?—Yes.

28,313. Have you any corresponding table as to the facts outside?—No, I have no corresponding table.

28,314. Taking your whole district all through, is the average rateable value increased or diminished?—Taking the whole district all through at the computation we made in the spring of last year to June 1898, the average rateable value was 22l. 10s. within the Metropolis, and 24l. without, giving an average net annual value on the whole of 22-9l., or say 23l.

28,315. That covers your whole district, does it?—That covers the whole district.

28,316. I daresay you know what your own increase in rates has been?—During the period from 1885 to 1896 the increase in rates paid by the company per annum amounted to 5,782l.

28,317. The increase in the rates that you paid?—Yes, in the rates that we paid to the parishes. Will you allow me just to put that right? I think the increase in the rates paid really amounts to 7,000l. The figure which I have just given you I wish to give you in this way—the assessment of the company's hereditaments within the Metropolis in 1885 amounted to 20,562l.; in 1896 those assessments had been increased to 37,908l., the increase being 17,346l. If you take the rates in the £ at 6s. 8d. on the average, that would mean 5,782l. increase; but, speaking from memory, I believe the actual increase paid in rates by the company has exceeded that sum. I think it is nearly 7,000l.

(Chairman.) I do not know that we need go into the increase that the quinquennial re-valuation has caused.

(Mr. Littler.) Would your Lordship mind having on the notes—because something, I think, will turn on it—the fact that a very large proportion of the increase is due to people who do not take water. There are but a very few figures there, my Lord.

28,318. (Chairman.) How do you explain the fact, that your property should have largely gone up in the valuation, that is, that the valuation of your property should have largely increased, whereas the valuation of all the properties, apparently, upon which you get water rates, has decreased; that seems anomalous?—It is by the accretion of new business; that is the basis upon which the increase in the assessment is made. Your Lordship is quite familiar with the rules as to assessment.

(Chairman.) I was some years ago, but they are very complicated, I know.

(Mr. Littler.) I do not think you have forgotten them.

(Witness.) As your Lordship knows, the basis of the assessment of a company to the parochial rates is the sum which a tenant would give for the whole undertaking, treating it as a going concern, with its profits, after making certain deductions for the occupier's capital, &c.

28,319. (Chairman.) Then you say, that the rise in your rates has not been due to any structural alterations but to the rise in your profits?—To the increase in the profits consequent upon the extension of business.

28,320. Whereas these other properties that have decreased in value have no profits, it is a mere question of the rent of the structure, of the premises, as they are?—Yes, and they have to a certain extent discounted the others.

28,321. Now, your counsel attaches some importance to some other table. What is it?—It is a table showing that the increase caused by the quinquennial valuation in the company's district is chiefly on properties upon which the company does not derive any benefit in increased water rental.

(The witness handed in Table. See Appendix S, 3.)

28,322. If you have anything to say about it, do. It conveys nothing to my mind?—I desire to submit this table as showing that the larger proportion

of the increase in the quinquennial list was derivable from the increased rateable values of properties which do not pay water rates upon those values.

28,323. What properties are those, railways?—Railways, water companies, gas companies, tramway companies.

28,324. (Mr. Mellor.) But surely gas companies and railway companies pay a water rate, do they not?—Not on rateable value.

28,325. (Chairman.) They pay by meter?—They are trade supplies. Thus, if you take the town of Lewisham, the first one on that list, you will see there is an increase in the quinquennial valuation of 1895 of 18,083l.; of that, 14,309l. was due to the increased assessments on the class of companies to which I referred just now. In the parish of St. Paul's, Deptford, where the total increase in the quinquennial list—

28,326. We will not go through your table; you have put it in, and there it is?—Yes, but may I give the totals?

28,327. Yes?—The total increase in the quinquennial list of the seven parishes referred to was 90,915l., of which no less than 84,365l. was due to the increased assessments on public companies.

28,328. (Mr. Mellor.) When is your next quinquennium?—1901. I may add that the effect of that revision in the parish of Lewisham was that the additional sum to be raised by a 3d. rate would be 6,360l., and of that the public companies would contribute 5,000l.; the licensed houses, 500l.; and all the other properties only 800l. The public companies in the parish were increased by 18-96 per cent., the licensed houses by 15-07, and all other assessments were increased by only 0-54 per cent. I submit that these statistics go far to disprove the suggestion that the growth of the company's income is obtained from the increases in these quinquennial lists every five years.

28,329. I do not know that we need go through these examples, we have them before us; but I think perhaps it is worth while just alluding to those instances in which there is actually a decrease in the total valuation of the parish, but a considerable increase in the company assessments, if I may so call them?—Such an example is furnished in the case of the parish of St. Paul, Deptford. There the results show that upon a total rateable value of 501,384l.—

28,330. No, I cannot go through your list; that is not an example of what I put to you. I was putting to you an example of decrease in the total assessment, and you must go to Lea or Kidbrooke, whichever you like, for a decrease in the total assessments accompanied by a large increase in the company's assessment. We have got your table before us, and you need not labour through every figure in it?—Your Lordship will have noticed that in this particular parish that I was about to refer to, there was a reduction upon the rateable value of house property.

28,331. No, indeed, there is not; in Deptford there is an increase of 15,965l. in the total valuation?—If your Lordship will allow me to finish that, you will see that of that the public companies were increased 14,018l.

28,332. I know they were, but there still remained an increase in the other valuations?—No. May I continue? The public companies were increased 14,018l., the licensed houses were increased 1,347l., and all the other properties 600l.; and upon shops and houses of a total value of 345,405l. there was a net reduction of 1,010l.

28,333. That does not appear in your table; where do you get that from, out of the depth of your inner consciousness?—No, but I have got that from statistics furnished.

28,334. That is not in your table?—The figures are not in the table, but I can give them to your Lordship.

28,335. Then, what is the use of your table? Either rely upon your table, or leave it alone, and let us strike it out?—The table does not purport to show the effect of the quinquennial alteration upon the house property. In this particular case, notwithstanding the large increase in the parish, in the total result there was actually a reduction of more than 1,000l. in the rateable value of the houses upon which we took our water rates. In the parish of Lea similarly, although there was an increase of 2,420l. in the public companies

assessments, there was a net decrease in the total of the list of 119*l.*, which proves a decrease in the house property of 2,539*l.* So in the parish of Kidbrooke, though the public companies were increased by 299*l.*, there was a decrease in the total of the list of 314*l.*, showing in that small parish a decrease in the assessment of the houses of 613*l.* Similarly in the parish of Charlton, with an increase of 2,073*l.* in the public company's assessments, the net decrease in the assessments of house property was 232*l.*

28,336. (*Mr. Pember.*) You mean besides this increase in the tramways, and so on, there were other increases which did not increase your water rates?—Yes, there are many others which do not increase the water rates.

28,337. (*Chairman.*) Now you have some correction to make in previous evidence, I think?—Yes, I wish to refer to the figures in the table put in by Mr. Gomme at Question 4020.

(*Mr. Mellor.*) Surely the simplest way would be that the witness and Mr. Gomme should agree upon these figures.

(*Mr. Littler.*) I do not think it even needs agreement, because this is a correction of Mr. Gomme's figures.

(*Mr. Mellor.*) I have no doubt it would be admitted. I do not see myself how you can expect the Commission to make these alterations and additions continually.

(*Mr. Littler.*) You will remember that St. Paul's, Deptford, was taken as an illustrative parish by the other side, and if that illustration is taken, it is disastrous for them on these facts.

(*Mr. Mellor.*) There ought to be no dispute about the figures.

28,338. (*Chairman to Witness.*) What have you to say with regard to that table?—It is with regard to St. Nicholas, Deptford.

28,339. What do you say about St. Nicholas, Deptford?—In that table dealing with the South of the Thames there are certain properties referred to whose rateable value is not a criterion of the charge for water. Then in column 8, there are figures given there as the total of the rateable value of the property in the parish which is liable to be rated by the companies. That table shows 49,269*l.* as the total rateable value upon which the companies' water rates were assessable. I desire to point out that some error has crept into this computation, because the rateable value of the Foreign Cattle Market, which alone is 24,000*l.*, would show that some mistake has been made.

28,340. I cannot follow that. Why does the Cattle Market show that there has been a mistake?—Because the rateable value of the Cattle Market does not form a basis for a charge for the water.

28,341. Who says it does? This table does not say it does?—This table says so, by including that value in the 49,269*l.*

28,342. How do you know it is included? What is there to show that there is not 49,000*l.* of rateable value besides the Cattle Market?—Because if you get the figures from the valuation list it is apparent that that cannot be the case.

28,343. Give us the figures from the Valuation List?—The total from the Valuation List was 56,894*l.* There is in column 13 of the table Government property stated there at 2,200*l.*, which would make the total of the valuation list, plus that 59,094*l.* There are in the parish 80 properties which are not chargeable upon the rateable value for water rates, and the total of such properties amounts to 42,823*l.*, leaving 16,271*l.* as the total rateable value in the parish upon which the company can charge the water rate instead of the 49,269*l.*, stated in Mr. Gomme's table.

(*Mr. Littler.*) Which makes an average rateable value of 14*l.*, instead of 42*l.*, as Mr. Gomme made out, or an average water rate of only 4*d.* per week per house.

28,343a. (*Chairman.*) Have you anything more to say?—I will, if you will allow me, put a small table in which summarises these figures very conveniently.

28,344. Put it in then?—It is only a short table.

(*The witness handed in Table. See Appendix S, 4.*)

(*Chairman.*) Do the County Council assent to these corrections?

(*Mr. Balfour Browne.*) I suppose it is right. So far as I see it does not really show anything different, because I am told the Corporation Cattle Market, which is 24,540*l.*, pays practically the same thing by meter as it would upon rateable value.

(*Mr. Mellor.*) Then what is the good of all this?

(*Mr. Balfour Browne.*) I do not think it really makes any difference.

28,345. (*Chairman.*) I have now completely forgotten what the object of this elaborate table of Mr. Gomme's was; and the correction of it, therefore, does not appeal to me at the moment?—I think it was to show the rateable value upon which the companies were said to have the power of charging.

28,346. I daresay it is all right. Go on; take it in your own way?—In Questions 4081 to 4806 your Lordship was inquiring of a witness as to the increase that has taken place owing to the re-valuation all over London, and the evidence was that 40 per cent. of the increase is due to the re-valuation of some buildings, and 60 per cent. to the erection of new buildings. The tables which I have put in show that nothing of the kind has occurred in the Kent Company's district.

(*Mr. Balfour Browne.*) This referred to all London, not to the Kent Company's district.

28,347. (*Chairman.*) Have you in your Kent district, since the Valuation Act, always charged your maximum?—Yes.

28,348. Always?—Always.

28,349. You do not conceive that Parliament has bound you to charge the maximum, do you?—I do not say that any company would be compellable to charge its maximum, but in equity, in a district like ours, one would assume that they should do it—in equity, because of the reversion of the consumers to the surplus profit, and in equity also to themselves, they having to follow the valuation lists in the alterations of rateable value from time to time.

28,350. In effect you read maximum as meaning minimum?—In one sense—the equitable minimum.

28,351. In the equitable sense maximum is minimum

(*Mr. Pember.*) It is minomax and minotaur.

28,352. (*Chairman.*) You make no allowance: you have no bowels of mercy like the New River, in the City?—We have not the same circumstances to deal with.

28,353. I did not ask you about the circumstances but the fact?—I can scarcely, say, yes, to your Lordship's question that we have no bowels of mercy, but we have not the objects of compassion.

28,354. You do not make any reduction to anybody under any circumstances?—No.

28,355. Whatever the nature of their consumption may be?—In cases where, for instance, a number of houses may be held by one tenant in common for shops, those houses may be separately rated, and in the separate ratings would be liable to the rates in those particular grades. As our scale proceeds in grades, where the charges are from 6 per cent. to 4 per cent., those houses taken separately would become liable to those particular charges, but if we put them all together they make a sum which would bring the assessment into the lower percentage rate. In that way exceptions have been granted.

28,356. How many of such cases are there in your district?—Not very many.

28,357. A dozen?—Possibly.

28,358. Half a dozen?—I should say a dozen.

28,359. (*Mr. Mellor.*) Is that at your option or at the option of the tenant?—That is upon the application of the tenant for consideration, and it is granted to him as being equitable in the case, because if he obtained an assessment over the whole of them, it would be his due.

28,360. (*Chairman.*) Do you mean a man taking three houses from the same landlord or from different landlords?—A man taking, say, eight shops—that might be from different landlords, or they might be all his own.

28,361. There equity would entitle you, of course, to take each shop separately and charge up to the full maximum rate?—The scale would permit that.

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28,362. What you do is to lump the rent altogether and treat the eight shops as one?—Yes, we have done that.

28,363. (*Mr. Mellor.*) That is where they are in one occupation, I understand?—Yes.

28,364. (*Mr. De Bock Porter.*) What was the effect of the Dobbs decision on the income of your company?—It had the effect of retarding the growth of revenue for the year in which the alteration was made. I beg your pardon, you asked about Dobbs' judgment; I am speaking of the Torrens' Act, which was practically the same thing.

28,365. That is the resultant legislation, and therefore the same thing?—It is practically the same thing.

28,366. (*Chairman.*) Up to that time had you charged upon the net rateable value, or upon the gross rateable value, or upon your own calculation of value?—We had charged upon the yearly value, which is the basis prescribed in the Act, and till that time there had been no definition of yearly value in any other sense than gross value.

(*Mr. De Bock Porter.*) It was your own definition.

28,367. (*Chairman.*) You charged upon the gross value?—Yes, on the gross rent—on the rent value.

28,368. In all cases?—Yes.

28,369. So that you had not the opportunity that other companies had of increasing their income as the result of the Dobbs decision?—No, we had so charged that, when the Torrens Act was passed and the other values substituted, the total income for the year was only altered I think by about 200*l.* to 300*l.* down.

28,370. (*Mr. Mellor.*) Are you quite sure about that figure, it strikes me as a very small reduction after Torrens' Act?—I am speaking from memory, but I am pretty confident about the result. You will see that we have in every year a growth of income due to new properties.

28,371. You mean taking it altogether?—Yes.

28,372. As I understand you, taking the whole thing into consideration, the reduction was only 300*l.*?—The reduction in the gross revenue was only that—it came in effect to this, that the year's increase from new business offset the reductions we had to make under the Torrens Act.

28,373. Exactly, but for the new businesses you would have had a very much larger reduction, as I understand?—Probably 4,000*l.* or 5,000*l.*

28,374. (*Major-General Scott.*) That latter figure represents the real effect then?—Yes.

28,375. (*Chairman.*) Do you object to any alteration of your present system of rating, which would consist in equalising the percentage rate leviable on the rateable value?—Yes.

28,376. The grounds of that being, I suppose, that the same rateable value at different parts of London represents a very different house, and therefore a very different consumption; is that it?—That is it exactly.

28,377. Have you anything more than that to say, because, if so, pray say it?—During the course of the proceedings it has appeared that, in the discussion on the proposal to equalise the water rates over London, it is suggested that the alteration to be made should be the reduction of the percentage rates of those companies which were higher than the others.

28,378. Yes, I have put that to you already?—I wish to point out that there are two elements in the case, that of the value as well as that of the percentage. There is also the element of the service, and the mere reduction of the rate per cent. to be charged upon the value would not bring about an equality of charge for the service rendered.

28,379. That of course is on the ground that the service rendered varies in different parts of London unequally with the rent?—Yes. I put that case in the concrete by saying that if you take the case of two towns of precisely equal numbers, and assume that they consume exactly equal volumes of water, that the cost of supplies is precisely the same, and is recoupable on value; then the rate in the pound to be levied to cover merely the cost of the water supply cannot be the same unless the values be the same; and given a difference in values no one would suggest in such a case that differentiated rates were unfair. Thus town A, say

with a population of 800,000, a water supply costing 125,000*l.* annually, and a rateable value of 5,000,000*l.* would require to levy a rate of 6*d.* in the pound; but in town B, with the same population of 800,000, and the supply costing annually the sum of 125,000*l.*, but with a rateable value of, say, only 3,000,000*l.*, there would be required a rate of 10*d.* in the pound. I would add that the only additional factor to the case which I have mentioned in the companies' case in contrast, would be the remuneration to be allowed to it above the cost, and that has been fixed by statute, reserving a reversion of the profit in excess to the consumer in diminution of his charge, and when that remuneration has been reached the percentage rate ceases to be a matter of importance.

28,380. Yes, when it has been reached, but it is a long way off in most cases and it is 23 years off in your case?—The West Middlesex have obtained it and we are within measureable distance, I may say.

28,381. We are now on the Kent Company?—Yes; and I think the Kent Company is within measureable distance of it.

28,382. It is 23 years off?—Yes, or shorter than that if the sinking fund be withdrawn.

28,383. Are the poorer portion of the population more heavily charged proportionately than the richer portion in your district?—Regarding the matter from the personal point of view, certainly not.

28,384. Are they more highly charged, or have they a lower charge in proportion?—In proportion to the number of persons in the house or in proportion to the number of houses?

28,385. Is a man living in a small low-rated house charged higher in proportion than a man living in a wealthy and high-rated house?—The man living in the small house is, under the scale, charged the higher percentage, namely, 6 per cent., on his value, whilst the man in the more wealthy house is charged 4 per cent. But when you take into consideration the demand made on the smaller value, take the case, for instance, of a cottage or a house or a tenement let at 5*s.* 6*d.* per week, where the owner is chargeable with the water rate under the scale, that water rate would be about 9*s.* 6*d.*

28,386. (*Mr. Littler.*) Per annum?—Per annum; there would be a water-closet free of charge, and water probably for six persons, which is the average number of persons per supply in my district to be fed with water for the whole year for that 9*s.* 6*d.*, or say 2*d.* per week. On the other hand, if you take a more wealthy house, say, there are also six persons living in the house, for which they pay, assume, 115*l.* a year, they would be rated at 96*l.*, and the percentage rate, though reduced in that case to 4, would entail a charge for water—assuming 2 water-closets, and a bath—of 4*l.* 18*s.* 9*d.* per annum, or ten times the amount of the other case. But the consumption in the latter house would not be anything like ten times the consumption in the smaller house, so that though the present rate may be higher on the lower values, the charge for water, family for family, is, on this basis, enormously to the advantage of the poorer portion of the population.

28,387. (*Chairman.*) You have got a table, I believe, which shows the average water rents per supply, per house, and per mile of mains in the several districts of the Metropolis?—Yes, I have.

(*The witness handed in Table. See Appendix S, 5.*)

28,388. The only result that I can gather from it is that you are the lowest of all the companies per house except the Southwark and Vauxhall and the East London?—That is so.

28,389. I suppose the Southwark and Vauxhall and the East London represent about the poorest districts in London?—Yes, that would appear to be so.

28,390. So that whatever their rate of charge may be they and you get less per house than the other five companies?—The object of this table is to show that. I have put the four companies together and shown in this return that the average water rate per house of the four companies—

28,391. Have I not put it to you—you need not repeat it?—I did not remember.

28,392. Those three companies have a lower rate per house than the other five?—Yes, that is so.

(*Mr. Pember.*) He has grouped four together.

(*Witness.*) I have grouped four together and I was about to give the result.

(*Mr. Littler.*) We have the lowest income per mile of anybody.

(*Chairman.*) Per mile of mains, but that conveys nothing to my mind.

(*Mr. Littler.*) That is a great consideration, my Lord, because a mile of mains with a large number of people taking all over it may be of much more profit to the company than a small number of supplies per mile.

(*Witness.*) In this table I have taken the four companies with percentage rates which are higher than the other four, and the result is that the average water rate per house of the four companies having the higher percentage rates but a lower average value of houses is 1*l.* 10*s.* per annum, the average water rate per house of the four companies having the lower percentage rates and the higher average value of houses is 2*l.* 16*s.* 4*d.* per annum.

28,393. (*Chairman.*) All that is in your table, is it not?—That is in the table.

28,394. Is the average water rate per mile of main confined to domestic purposes, or does it include the trade purposes as well as domestic?—There are two columns.

28,395. Do answer the question as it is put to you—does the average water rate per mile of main, cover trade purposes as well as domestic purposes—that can be answered, yes or no.

(*Mr. Balfour Browne.*) In column 4 it does, in column 6 it does not.

28,396. (*Chairman.*) I am on that column 6—is the average water rate per mile of main confined to domestic purposes?—In that column it is, but in column 4 it is not.

28,397. I did not ask you about column 4, and I will not trouble you about it?—That unfortunately is why I had to give you the answer I did just now that in one column the average water rental per mile of mains does include the whole, and in the other, only the domestic supplies are included.

(*Mr. Littler.*) Your Lordship will see that for both we are the lowest—265*l.* including supplies by meter, and 199*l.* without.

28,398. (*Chairman.*) All these, I suppose, are arguments tending to show that equalisation by establishing some percentage rate uniform in London is not a wise suggestion?—Precisely. It would not effect the object suggested, because, if the higher percentages are reduced, then the lowest average would be still further reduced, whilst the higher rates would be left intact.

28,399. What is the average rental value in your district? Can you give me that?—I do not know that I have the average, but I can give you some statistics with reference to it.

28,400. If you do not know it, I will not trouble you. Have you ever had any competition in your district with anybody?—No, with none of the other companies.

28,401. When was your dividend first limited?—In 1864.

28,402. Do you claim any back dividends earlier than 1864?—Yes.

28,403. At what date do you claim to begin your back dividends?—From the issues of the respective capitals.

28,404. What date would that carry you back to?—1809.

28,405. What possible claim can you have to a back dividend at a time when your dividend was unlimited?—At that time there was no claim to a back dividend, but in 1864 when the limitation was imposed, the limitation enacted that the profits to be divided by the undertakers in the year should not exceed the prescribed rate, and when there was no prescribed rate, then the sum of 10 per cent. per annum, unless a larger sum be necessary to make up the deficiency of any previous dividend which shall have fallen short of the said rate. Prior to that date, as your Lordship said just now, the power to make profit was unlimited; at that date it was limited to 10 per cent., prospectively and retrospectively—"you shall not go above 10 per cent. only" to the extent to which you have been below it in the "past."

28,406. Have you already paid up such back dividends as would have been due since 1864?—No, not all.

28,407. How long would it take you to pay up the back dividends due since 1864?—Three or four years now.

28,408. What legal means would there be of testing your right to pay any earlier back dividends?—The Government Auditor.

(*Mr. Balfour Browne.*) Any persons paying water rates could take them before the Court of Quarter Sessions to reduce the rates, and if the back dividends and the reserve fund had been fully paid up they would have to reduce the rates.

28,409. (*Chairman.*) What reserve fund are you entitled to have in your company?—After payment of the back dividends, a reserve fund of 10 per cent. on the capital.

28,410. Have you got that reserve fund in your hand now?—No, we have not attained to the point of the completion of the back dividends. The fund is directed to be formed after the payment of the back dividends.

28,411. What have you paid in all for back dividends up to this time—what is the total?—111,460*l.*—that is up to the last payment.

28,412. You claim on your basis how much?—1,083,546*l.*; the balance now remaining of that after deducting the 111,460*l.* is 972,086*l.*

28,413. (*Mr. De Bock Porter.*) Have you discussed with the auditor the question of paying the back dividends prior to 1864?—As to the power to pay it?

28,414. Yes?—No, we have not discussed that power with him.

28,415. Have you taken any opinion on the subject?—Not specially; the company's solicitor has advised us.

28,416. But if you cannot go beyond 1864 you are within a very measurable distance of your limit, are you not—you said 23 years?—That would be so.

(*Chairman.*) It is not a point for us to solve.

(*Mr. De Bock Porter.*) No company, I think, so far has claimed to go back beyond 1847.

(*Chairman.*) That is beyond the date when their dividend was fixed.

(*Witness.*) I am not aware whether there has been any claim made by any other company to go back.

(*Chairman.*) It strikes the ignorant mind, you know, in this sort of way: Parliament says you shall not have more than 10 per cent. in any one year, but if you fall short of your 10 per cent. in any one year, you may make it up in the succeeding years—that is what it sounds as if it meant.

(*Mr. Balfour Browne.*) The Government Auditor expressed the opinion that the West Middlesex could not go back beyond 1872.

(*Chairman.*) However, it is not for us to determine the point.

(*Witness.*) There may be special circumstances in the legislation of West Middlesex which may not apply to my company—I do not know, but there may be. I may say that the company's view as so expressed was accepted by the advisers of the Government in 1880.

28,417. How do you mean accepted by the advisers of the Government?—It was given in evidence by Mr. Smith that he had consulted the legal advisers of the Home Office, and that upon that opinion he had admitted the right of the companies to the back dividends both prospectively from 1847 and retrospectively

28,418. (*Mr. De Bock Porter.*) Do you know what round sum he put down for the back dividends of the Kent Company?—I speak from memory—about a million.

28,419. You were not touching them at the time, or you were not in reach of them?—As he said, we were within measurable distance of them; we were at 9½ per cent.

28,420. (*Mr. Balfour Browne.*) I think it was 480,000*l.* in your case?—I think you are referring to the figures which Mr. Smith gave as having been conceded by him in the arrangement that was made at that time.

(*Mr. Freeman.*) Yes, quite so.

(*Witness.*) That is what he agreed to give.

Mr. A. Dickson.

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Mr. A.
Dickson.
—
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28,421. (*Mr. De Bock Porter.*) Assuming you can only go back to 1864, how much more have you to pay?—Speaking in round figures, 100,000l.

28,422. Then it is a question of 872,000l.?—Yes.

28,423. (*Mr. Littler.*) I daresay you can give the exact figure next time?—I could give the exact figure at the next sitting.

(*Mr. Balfour Browne.*) I think the exact figure is more than this witness makes it—I think it is 140,176l.

(*Witness.*) From now?

(*Mr. Balfour Browne.*) From now, left to be paid back, counting back to 1864.

28,424. (*Chairman.*) Do you wish to put in any certificates of the auditor?—I think one of the Members of the Commission expressed a wish that the form of resolution for declaration of back dividends might be shown to him, that was all.

28,425. I do not know who that was?—I think it was Mr. Mellor.

28,426. Very well, I must pass it over, as I am afraid I cannot see the point. You have paid your back dividends with the sanction of the auditor, of course?—Yes, we have.

28,427. (*Mr. De Bock Porter.*) Do you anticipate being able to increase the 4 per cent. in the next year or two?—The profits will probably allow it.

28,428. (*Chairman.*) Of course, you object to the sinking fund clauses?—To their continuance.

28,429. (*Mr. De Bock Porter.*) They do not operate as regards your company at present, do they?—No.

(*Chairman.*) I do not know that I need take you into the question of severance—it seems to me to be hardly a question for the secretary of the company.

(*Mr. Littler.*) Unless your Lordship desires it, we were not thinking of calling our engineer, so that if there is any question of detail of that kind it would be more convenient, I think, to get it from this witness. Of course, we are quite prepared to call the engineer, if your Lordship wishes it.

28,430. (*Chairman to Witness.*) Will you say what you have got to say about severance?—The sum of it is this—merely that the proposal to hand over to each local authority the sources of supply within its district would lead to considerable confusion and undesirable conditions with regard to the control of the supplies. If each local authority in my district had the sources of supply in that district transferred to it, a large proportion of the water which is required for inside the Metropolis, for the metropolitan authorities, would be in the hands of these local authorities.

28,431. That does not follow, you know—you might give a source of supply that was in a rural district to the metropolitan authorities, there is no impossibility about that?—What I was contemplating was the possible assignment to the local authorities of the sources of supply, and I was just drawing attention to the inconsistencies in regard to quantities, and so on, which would arise from any such severance.

28,432. Say anything you have to say, please, on that subject?—I think I have said all I need say from the company's point of view, unless your Lordship wishes any further information.

28,433. (*Major-General Scott.*) Have you any examples to give which would clear up the facts?—Yes—take, for instance, the urban area of Beckenham; the company only supplies the Shortlands section. In that section, the Shortlands pumping station is situated. The district only contains 247 supplies, with an estimated population of 1482 persons and a total daily requirement, at 30 gallons per head, of 44,460 gallons. The Shortlands pumping station furnishes a daily yield of 2½ million gallons, enormously in excess of the requirements of the population supplied by the company in that area; and that pumping station also partly supplies Bromley, Chislehurst, and Lewisham; so that the same delivery of water being continued there would be in the hands of this local authority this source of supply upon which another urban authority, a rural district authority and a metropolitan authority, would be dependent.

28,434. (*Chairman.*) What is the objection to that?—I assume the objection is, that it is undesirable to have the source of supply upon which one authority is

dependent in the hands and under the control of another local authority.

28,435. The greater portion of the water required would be required for the purposes of those who had no control over the source?—It would be so in that case; and similar conditions would arise in the rural districts of Bromley and of Dartford, upon transfers of that kind. In the Bromley district there is one source of supply at Farnborough. The water from that source—2½ millions a day—is supplied partly within its district partly within the Dartford and Sevenoaks Rural District Authority's areas, and partly within the Metropolitan Authority's area. The census population of the Bromley rural district is, approximately, 34,000, and the daily requirement at 30 gallons, would be about 1,020,000 gallons. There has recently been completed another source of supply in that district, making the whole yield 3½ millions in the hands of that authority; so that it would be holding sources of supply greatly in excess of its requirements, while the Bromley Urban Authority would be without any source, and the Metropolitan Authority would be partly dependent upon the three sources in the hands of that authority.

28,436. What would be the difficulty in giving the Bromley authority this second source of supply at West Wickham?—It would be beyond its area.

28,437. What does that signify?—I am contemplating the transfer to the authority of the district of all the sources within its district.

28,438. But that is not necessary, you know. You may complicate the problem, of course, by imposing that condition; but there is no reason that I know of, why a local authority should not have a source of supply outside its district. I thought we had heard about Birmingham going to Wales, and Manchester going to Thirlmere, and so on?—The object of this reference is to show the advantages of unification of supply in that area. Those local authorities are comparatively small constituencies, and they can very much better operate for the water supply through a unified arrangement than through a severed arrangement.

28,439. Have you ever heard any human being in the practical world suggest that all these little local authorities should have the control both of their supply and of their distribution?—Under the terms of reference it seemed to contemplate such a possibility—as to whether the water supply should be in the hands of one or more—

28,440. I do not mean to say it is not exactly within the very literal terms of the reference; but what I am asking you is, whether you ever heard any practical person suggest that all these small local authorities should have both the sources of supply and the distribution of the water in their own hands, and that the existing water companies are to be cut up into something like 150 (I suppose) fragments?—I think that under the Bills of the London County Council it is contemplated to sell or to transfer the portion of the supply within the area of a local authority to it.

28,441. Do you take that seriously?—It is in the Bill.

28,442. Do you not see that that is only a polite way of saying: "We hold this pistol at your heads, otherwise take the water in bulk from us." What I ask you is whether you ever met a practical person who suggested this was a possible thing, to split up sources of supply and the means of distribution among all these little local authorities?—I think it is impracticable.

(*Chairman.*) Hardly worth controverting, I should have thought.

28,443. (*Major-General Scott.*) The local authority in each of these small districts under the Sanitary Act is the recognised water authority, is it not?—That is so; the rural district council is the sanitary authority in its district, and the urban district council in its district.

(*Mr. Balfour Browne.*) A clause, my Lord, is now introduced in the model Bills for every water company or Corporation Act, giving outside authorities the right to purchase the mains, pipes, fittings, and apparatus in their districts, but nothing more. That is in the model Bill, which must be followed.

(*Chairman.*) I have not mastered the London County Council's Bill. Does it propose to sell the sources?

(*Mr. Balfour Browne.*) I am referring, my Lord, to the model Bill for all water undertakings.

(*Chairman.*) Mr. Dickson has referred to the County Council's Bill; does that propose to sell the sources of supply to all the small local authorities?

(*Mr. Balfour Browne.*) I think not.

(*Chairman to Witness.*) You see you have mis-read it.

(*Mr. Pope.*) I think if your Lordship looks at the Bill you will find that Mr. Dickson is right. No doubt it is intended, as Mr. Balfour Browne says, rather to sell the distribution than the source of supply, but the Bill as drawn would enable them to sell the sources of supply, clearly.

28,444. (*Chairman.*) I suppose you can give us other instances of the same kind, where sources of supply are situated in one local district but are of a volume and of a character that serves the needs of several other districts?—That would be the case also with the district of the Dartford Rural District Council, where there are two companies' sources, namely, the Crayford pumping station, with a yield of $3\frac{1}{2}$ million gallons per day, and Wilmington, with a yield of 6 million gallons, together $9\frac{1}{2}$ million gallons per day. The census population of that district is approximately 37,000, and assuming the whole to be supplied, which is probably not the case, the daily requirement at 30 gallons per head would only be 1,110,000 gallons. These sources would thus be $8\frac{1}{2}$ millions in excess of the needs of that particular district. Within the last year we have completed another source of supply within the district of the same authority, which would, therefore, make at its disposal $10\frac{1}{2}$ million gallons daily for a requirement of one million. The water from those sources is distributed within the districts of the urban authorities of Dartford, Erith, and of Bexley, as well as in that of the Dartford Rural District Council, and also largely in the county of London. Such a change would leave those three urban authorities without sources, and they with the London authority would be dependent upon another rural district authority for their supply. The converse case would be met with in a portion of the company's district within the Metropolis. There the sources remaining to the authority would be equal to 8,800,000 gallons a day. The population is approximately just under 400,000; the daily requirement at 30 gallons you may put at 12 millions, and the supply from these sources would thus need to be supplemented from outside.

28,445. Can you suggest on this system of infinitesimal division, which local authority would have to supplement the supply for London?—There would be a difficulty, of course, and the undesirability—

28,445a. Can you solve that difficulty?—No, I think not, because the water required for the population of the future will have to be obtained from different sites and different authorities' areas, and I do not know that there would be any one authority which from its area could undertake to meet the future wants of London.

(*Chairman.*) We will finish your examination at our next sitting.

The witness withdrew.

(*Mr. Pope.*) Will your Lordship desire us to go a little further into the question of Deacon's meter, and the prevention of waste? If you would, we, for the

New River, should be glad to call Mr. Collins, who has made it a special study in our district, who could tell your Lordship exactly how far Deacon's system has enabled us, at all events, to restrain our waste, within the whole of our district.

Mr. A.
Dickson.

28 Feb. '99

(*Chairman.*) Could he give us a table?

(*Mr. Pope.*) I daresay he can, but at all events he will give his evidence extremely shortly, if he cannot give a table.

See
29,225-
367.

(*Mr. Pember.*) I am told we can do the same for two or three other companies.

(*Chairman.*) Very well.

28,446. (*Mr. Pember.*) I am happy to say, my Lord, that that question which is at issue between Mr. Wilkins, the Lambeth Secretary, and Mr. Haward, as to his table at Question 2353, has been settled. They have agreed what the truth of the facts is, and I will just ask to read to you what the facts are; it will not take me two minutes. At Question 2353 the Lambeth Company is said, between the period of 1872 and 1897, to have increased their capital by a largish sum, 959,697*l.*, another sum of 200,000*l.*, and another sum of 49,500*l.* Those three together make up a sum of 1,209,197*l.* Now Mr. Wilkins took exception to that, and then my learned friend Mr. Balfour Browne again took exception to the correction. The figures that appear in that table are now agreed by both sides not to be incorrect in themselves, but the stock and debentures, the share capital debentures, are returned all in one in those figures, and they ought to have been in separate columns. Then what Mr. Wilkins desired to have appeared would have appeared. As matters stand, however, it would seem from that table as if the capital of the company had been increased by that 1,209,197*l.* during the period from 1872 to 1897. The fact is that in that total figure of 1,209,197*l.* is included a certain sum of 312,639*l.*, which consisted of terminable debentures which were subsequently converted during that same period into stock, and which converted stock is in itself also included in the total sum of 1,209,197*l.*; therefore that sum of 312,639*l.* really appears twice over. Mr. Wilkins and Mr. Haward have agreed that that is the fact, and that that correction, therefore, for all future purposes, and possible purposes, should be made. But Mr. Wilkins desires to say that he is quite convinced that there was nothing on the face of the Parliamentary Returns, by which Mr. Haward says that he was guided in making up his total, to lead Mr. Haward's mind to see the necessary correction. No imputation is intended against Mr. Haward in any way, and both sides are satisfied.

(*Mr. Balfour Browne.*) We quite understood that at the time.

(*Mr. Pember.*) All right; both sides are satisfied, and nothing more need be said.

(*Mr. Pope.*) It can only be the mind of an accountant that would resent an imputation that he could sometimes be wrong in figures.

(*Mr. Pember.*) The question of whether that was a fact or not might crop up on some future occasion, and I think Mr. Wilkins was quite right in drawing attention to it, though how it bears on the question of the financial advantage of purchase I do not see.

[Adjourned till Monday next at 12 o'clock.]

FIFTY-SEVENTH DAY.

Monday, March 6th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

Sir JOHN EDWARD DORINGTON, Bart., M.P.

ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.

HENRY WILLIAM CRIPPS, Esq., Q.C.

ROBERT LEWIS, Esq.

OSWALD OWEN, Esq., *Secretary*.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.

Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.

Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.

Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir Joseph Leese, Q.C., M.P., appeared as Counsel for Kent County Council.

Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the Corporation of Croydon.

Mr. ALEXANDER DICKSON recalled and further examined.

Mr. A.
Dickson.

6 Mar. '99

28,447. (Chairman.) I think we were upon the subject of severance at the last adjournment?—Yes, my Lord.

28,448. And you gave us a number of figures the other day which it might perhaps be convenient to summarise. What is the capacity of your existing sources outside London?—16½ million gallons daily average supply.

28,449. Whereas the requirements outside London are what?—4 million gallons a day.

28,450. On the other hand, the sources of your Company within the county of London are capable of affording how much?—8½ to 9 millions.

28,451. And the daily requirement?—The daily requirement within is 12 millions, according to the take of the population. If that requirement were estimated at 35 gallons per head, then it would be about 14 millions inside.

28,452. The result of that is to show that your sources of supply outside London are more than the outside districts require, whereas the sources of supply inside the county of London are much less than the county require?—Exactly.

28,453. And that is one of the difficulties of any system of severance?—Quite so.

28,454. It would make the county of London dependent on some local authority outside?—Yes, that would be the practical effect, making the larger dependent on the less. Then also as the population grows, and the requirement for water increases, the additional quantity would, in the ordinary course of things, be met by additional sources of supply outside the county of London rather than within the county of London, the largest body of water being available in the district outside the county.

28,455. There would be no absolute impossibility in the county of London having access to those sources?—No, unless it were assumed that the sources of supply within the district of any particular authority were to be retained solely for the use of that authority.

28,456. Do you find that the rural authorities in the county of Kent have exercised their powers under the Public Health Act?—No, on the contrary, they have desired the company almost from its inception to undertake the duty and discharge it for them. In the year 1811 the Town Commissioners of Woolwich had

parliamentary authority for the administration of the water supply within their area. They bought some springs and they bought an engine, but before they had proceeded any length with their operations they approached the Kent Company and asked them to take over the duty, and assisted in the promotion of a Bill in Parliament to enable the transfer of those powers to the Kent Company. Then since that, a similar thing happened with regard to the Local Board of Dartford. They also had erected some waterworks and a reservoir.

28,457. At what date was that?—That was about 1854. The company in 1867 bought the works and has taken over the supply and administered it since. Then in the case of the Bromley rural district authority, the company having obtained powers by its Act of 1864 to supply in Bromley, which is the principal town in that district, the rural authority subsequently requested them in 1877 to obtain powers for water supply in the Cray valley district of their area, so that the necessary supply of water in conjunction with a sewerage system which the authority had constructed, should be provided; and subsequently the same authority again asked the company to apply for powers to cover the whole of its area, including the Knockholt Range where the levels rise to as high as 780 feet above Ordnance datum; and that district is now supplied with water.

28,458. And the local authorities have given up the attempt to supply, have they?—Certainly; they are not in a position to supply now that the company is both able and willing to supply in the district. The dates of the applications from that authority were 1877, which I think I gave, and 1888 for the last section of the district. Then the Sevenoaks Rural Sanitary Authority also requested the company to undertake the duty of providing the water in Halstead and that part of its district.

28,459. In fact, then, Kent is anti-municipal in its water tendencies?—Decidedly. Kent has been in favour of the unification of the water supply of the county in the hands of the company.

28,460. And has the company given satisfaction, or do you get complaints about your supply?—I believe the supply of water throughout the whole district gives entire satisfaction. There are no complaints either as to the quality or the quantity. When I say no complaints, I will give your Lordship an instance—the last one that was received only the week before last.

A gentleman residing near Blackheath wrote to me that the water he was having was not satisfactory, and that he very much feared that it was contaminated with some organic matter. The letter was received by the morning's post, an inspector was sent over immediately, and on getting up to the cistern in the roof a dead starling was found there in a bad state of decomposition, accounting for the condition of the water. Such complaints as we receive are only of that kind, arising from local and accidental circumstances.

28,461. The Kent Company does not, I believe, filter its water?—No, the water does not require filtration.

28,462. I do not say it does; but as a matter of fact you do not filter it?—No, we do not.

28,463. (*Sir John Dorington.*) Can you supply any one part of your district from any other, or have you virtually got separate supplies and separate mains?—The different parts of the district are connected by mains which will enable a supply of water to be passed round from one station to another, so that in the case of a breakdown, assistance can be got from other places. That was instanced in September last when the Wilmington pumping station was taken out of supply for a day or two by an accident to the pumps, and the supply of water for that district was obtained from the other stations.

28,464. So that your water is all interchangeable?—It is interchangeable.

28,465. (*Chairman.*) Passing to the subject of control, I do not think I will trouble you to mention the existing modes in which control is exercised, because we have heard them so often. Under the Metropolitan Water Acts of 1852 and 1871 and the Waterworks Clauses Act, 1847, there are various provisions for the control of the companies?—I think a statement is under consideration between both sides, which will be submitted to the Commission on the subject of existing control.

28,466. Yes; we have had it over and over again, so I will not trouble you on this point. Lastly, there is the Metropolitan Water Act, 1897, of which we know the provisions?—Yes, extended to the whole area.

28,467. Can you suggest any further control that will be useful to the public?—Only such as would eventuate from the operations of the Bill which has been submitted to Parliament by the companies with regard to inter-communications, under which a very considerable control would rest in the hands of the Local Government Board as to the operations of the company.

28,468. You do not think some supervision of the extent of your pumping, for instance, would be useful?—I think that would follow from the operation of the Bill, through the supervision of the Local Government Board.

28,469. I think not. The Bill, as far as I know—I have never seen the text of it—applies solely to the subject of inter-communication and of works necessary to render inter-communication possible, but it has nothing to do with your ordinary pumping operations in your outlying wells. Have you ever had any complaints in Kent about the depletion of other wells and streams such as we have heard of in Hertfordshire?—No, decidedly not—such as has been stated in Hertfordshire.

28,470. Has your company any objection to make public the extent of the pumping and the rest levels of your wells?—I think the chairman of the company answered that question to your Lordship by saying that he thought that it was one that the company should meet as regards official information—that would be information to the Local Government Board, but not in a way which should permit of any exterior interference or control on the part of private individuals.

28,471. But the information must be accessible to the whole public?—Through the Local Government Board, I should assume.

28,472. (*Major-General Scott.*) That comes to very much the same thing—I mean whether it is published through the Local Government Board, or any other medium, it would come to the same thing, would it not?—I think it is a point which requires mature consideration as to whether it is expedient that the operations of every water authority—because if it applies to one it applies to all—should be published in detail in regard to everything connected with its plant or with its pumping operations.

28,473. But a water company in your position is not exposed to competition like an ordinary trade enterprise?—No.

28,474. Therefore that reason which affects those trade enterprises, the necessity for a certain amount of reticence does not apply to your case, does it?—I think that, looking at the matter generally, the principle ought to be adopted of protecting in every possible way the sources of a public water supply, whether in the hands of a municipal body or of a company, and that the publication of information with regard to operations should be looked at from that point of view. Of course, very valuable information might be furnished to other persons when they see what a water company is doing in order to obtain its water; and it is impossible to say how that information may be used, possibly to the detriment of the water authority—I do not say of the company, but of the water authority.

28,475. You mean, for instance, that a brewery might acquire a knowledge of a successful operation on your part in sinking a well, and might immediately sink another well in the vicinity; is that a case in point?—Yes, that would be a case in point.

28,476. (*Chairman.*) They would have just as much right to sink their well as you would have to sink yours?—Yes, they would; but the well being for public water supply I think ought to be put in a different category. I think the public water supply ought to be the first point of conservation.

28,477. (*Mr. De Bock Porter.*) Although it may be a commercial undertaking?—Yes, although it may be a commercial undertaking. I cannot see that *quâd* the commercial undertaking makes any difference from the public point of view. The water supply to the public is of paramount importance, and ought to be conserved in every possible way.

28,478. (*Mr. H. W. Cripps.*) Would you go to the extent of saying that you think the fact that you are going to supply water to a great many persons instead of to one is a matter which ought to be legally taken into consideration—a right of that kind?—Yes, I think so.

28,479. You think that your water ought to be more protected by the law than in the case of a man who has sunk a well for a brewery, for instance?—Yes, I do. I think the time has arrived when that position ought to be conceded to the water authority, whether it is municipal or whether it is corporate.

28,480. Do not you think that would be very soon decided by the first case of the kind that came before the Court?—I am speaking in anticipation of legislation to that effect.

28,481. (*Chairman.*) Do you mean that you anticipate legislation that would entitle a water company to drain the wells of all its neighbours?—To obtain sufficient water for the supply of the inhabitants of its district.

28,482. Even at the cost of draining the wells of all its neighbours?—Possibly.

28,483. I do not think we need go into the inter-communication system; we have done with that?—Yes, that matter has been dealt with.

28,484. Your company claim, I believe, to have an unlimited power of drawing water from wells?—Yes, within its district.

28,485. The Balfour Commission estimated a daily average supply of 27½ million gallons could be obtained?—As a minimum quantity which could be safely abstracted.

28,486. What do you draw now from your wells?—The average daily supply is about 16 millions, the maximum the last year 21¼ millions.

28,487. How much could you draw?—25 millions daily; that is, with our present appliances.

28,488. Do you believe, with enlarged appliances, you could obtain much more?—Very much more.

28,489. Then you disagree with the statement made by Mr. H. L. Cripps before us that the Kent Company's powers were limited to 27½ million gallons a day?—Yes, and I cannot find that there is any real justification for any such statement.

(*Mr. Balfour Browns.*) Where did Mr. H. L. Cripps say that, my Lord?

(*Chairman.*) It is under Question 6070.

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28,490. (*Mr. De Bock Porter.*) Did you have no complaint last year of depleting private wells in the neighbourhood of any of your larger wells?—No, we had no complaints at all of our having depleted any of the wells. Of course, we heard of wells in which there was no water in different parts of the county, but that was a common experience quite apart from the company's operations.

28,491. (*Chairman.*) But were those wells in the neighbourhood of your wells?—A mile off, and many miles off.

28,492. To what do you attribute that failure of those wells? Was it that they were not deep enough, or what was it?—I attribute it to the extraordinary deficiency in the rainfall of the year. Of course, your Lordship has had that table of the rainfall submitted to you in which it was shown that the rainfall of last year was, without precedent, smaller than anything previously recorded.

28,493. Yes, but your wells did not fail?—Our wells did not fail.

28,494. Are they deeper than these other wells?—Much deeper.

28,495. You have consulted Mr. Whitaker, who is, I believe, an authority on geology?—Yes, in view of that somewhat absolute statement, which was made by Mr. H. L. Cripps, that it was admitted as rather an important fact in the case by the general concurrence of geological experts that the total amount of water available in the Kent area, that is to say, the total possible yield of the chalk in the area would be 27½ millions a day; the company thought it desirable that the Commission should have the opportunity of hearing the evidence of Mr. Whitaker upon that point, to show that there was no such general concurrence of geological opinion in that direction, and that the quantity of water to be obtained in the company's present area is enormously greater than that 27½ millions.

28,496. What is it; just give us the total?—Taking the total upon the percolation unit which Mr. Whitaker will submit to the Commission, the amount would approximate to 60 million gallons a day over the whole of the district, taken both from the chalk and from the green sand.

28,497. (*Major-General Scott.*) The conclusion of Lord Balfour's Commission reads as one of rather an absolute character, does it not?—I do not read it so.

28,498. Look at paragraph 180 in the Commission's report—

(*Mr. Littler.*) I think your Lordship will see to the east of us there are 207 million gallons more. Your Lordship will find that on about the central page of that document. That is not paged up, unfortunately.

28,499. (*Major-General Scott.*) They say, "From wells in the chalk area on the south side of the Thames, in the district of the Kent Company, we are of opinion that a daily average supply of 27½ millions of gallons may be obtained"—Yes. We had put an estimate before the Commission of 29 million gallons, but that estimate was from existing lands and stations, and I read this report to refer to those existing lands.

(*Mr. Balfour Browne.*) I may say paragraph 187 speaks of "From the existing wells of the Kent Company and others which may be sunk within their district, we think 27½ million gallons a day may safely be taken." I do not think Mr. H. L. Cripps' assertion goes beyond that at all.

(*Mr. Pember.*) Yes, it does.

(*Witness.*) Mr. Cripps' assertion is "the total possible yield of the chalk in the area is 27½ millions." There is no ground for any such statement.

(*Mr. Littler.*) Then "from the tract of chalk country in the valley of the Medway, and the larger area further eastwards to the coast, a very considerable addition is also undoubtedly procurable"; and the total of the whole—that is, within the district of the company and in the district to the east of Kent is, as your Lordship will find, 256,300,000.

(*Mr. Balfour Browne.*) That is not in the Kent area; the Medway is not in the Kent area.

(*Mr. Littler.*) Some of this is being absolutely wasted at this moment, and cannot be utilised. I will refer to that when I come to address your Lordship.

28,500. (*Chairman.*) Your estimate as to what can be got in the district is 60 million gallons a day?—Yes.

28,501. And if you go beyond the area of the company to the east of the Medway, you get a very much larger quantity?—Yes, three or four times that quantity.

28,502. (*Mr. Littler.*) In the district to the east in Kent it is 196½ millions. (*To the witness.*) And a very sparsely populated district, is it not?—Very.

28,503. (*Major-General Scott.*) A question arises as to the quantity you can intercept, given a certain amount of percolation?—Yes.

28,504. It does not follow, because you get a quantity represented by many millions of gallons of percolation, that you can intercept all that?—No, it does not follow. Of course, the extent to which you can intercept it will depend upon the success of your operations, and your selection of sites, and the works you construct; but having regard to the quantity which we have already obtained from our own district there would appear to be no ground for concluding that we should not be able to obtain all the extra quantity required similarly from the other parts of the district and the district beyond.

28,505. (*Chairman.*) Did you call a Mr. De Rance before Lord Balfour's Commission in 1892?—Yes, he gave evidence for the company before that Commission.

28,506. Did he estimate the daily quantity that could be obtained within your district?—Yes, from the present district at 54 millions.

28,507. Then the Royal Commission seem to have rejected his evidence?—I do not read it that they rejected his evidence. I look at the report of the Commission in this way. They were dealing with the possible population in the future requiring a possible quantity of water, and, as I read their report, it appeared to sum it up in this way. So much water can be got from the Thames, so much water for a certainty from Kent and from other wells in the chalk; and, therefore that possible population will be provided for. I did not read the report of the Commission as going any further than that, and certainly not as saying that no further quantity of water could be obtained from either of those sources.

28,508. (*Major-General Scott.*) From paragraph 102 onwards Lord Balfour's Commission seem to have gone very exhaustively into the question of the quantity to be obtained from the chalk district in Kent?—Yes.

28,509. (*Major-General Scott.*) They had before them the evidence of Mr. Whitaker and Mr. Topley?—Yes, that is so. All that evidence pointed to the large body of water which was obtainable both in our district and in the district beyond.

28,510. (*Chairman.*) I believe you have a number of returns to put in relating to your company. There is first a return as to your works and supply?—Yes.

(*The witness handed in Return. See Appendix S, 6.*)

28,511. That contains particulars of your pumping and other mains, including service mains?—Yes.

28,512. It also contains statistics of your daily supply from the year 1839 onwards?—Yes.

28,513. And a description of your distributing mains?—Yes, that is also in it.

28,514. Then will you put in your financial return?—Yes, the figures have been brought down to June, 1898.

(*The witness handed in Return. See Appendix S, 7.*)

28,515. I see that the market price of your Ordinary Stock has, upon the whole, risen with some fluctuations from the year 1879 down to the present day?—Yes.

28,516. You have put in that return?—Yes.

28,517. Then will you put in the return of the distribution of your capital expenditure?—Yes.

(*The witness handed in Return. See Appendix S, 8.*)

28,518. Have you also a return showing the number of supplies, estimated population supplied, and the rateable value of the properties supplied by the company?—Yes.

(*The witness handed in Return. See Appendix S, 9.*)

28,519. And lastly, will you put in the estimates of your future capital expenditure?—Yes.

(*The witness handed in Estimates. See Appendix S, 10.*)

28,520. I should like to get the results of these estimates shortly before us. What do you estimate will be your future capital expenditure to supply

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the needs of your area up to 1937?—Upon the basis of the Balfour Commission quantity of 35 gallons a head, plus 6 per cent. for occasional margins, and allowing 20 per cent. for the margin between the ordinary supply and the maximum supply, the total outlay we estimate up to 1937 is 1,500,250*l.*—a million and a half.

28,521. Is it not 1,553,200*l.*?—The figure you refer to I will give you presently. That is a supplementary estimate based upon another request from the Commission.

28,522. Do not go into details. I am only asking you whether you have not given me the wrong figure, and whether the right figure is not 1,553,000*l.* It is very simple if you just apply your mind to that?—That is the sum taking the estimate upon the total populations of each of the parishes and not upon the population supplied. We first of all made our estimate upon the growth of population according to the census factor per house of the number of houses supplied; then we projected that population at the rate of 30 per cent., which we found to be the rate of increment for the decade in our portion of the area of water London; then subsequently we received a request from the Commission to base our estimate of the future population, not upon the number of houses supplied or the population in those, but upon the whole populations of those districts wherein we supplied, and making the estimate upon the latter bases the total figure works out at 1,553,000*l.*, as you have read it.

28,523. If you take into account only the population supplied, it is how much? Give me the figure again?—1,500,250*l.*

28,524. In what way have you got at the population supplied and the total population in 1937?—By taking the census factor per house of the number of persons in the ratio of houses to population.

28,525. What—that is to me totally unintelligible?—Taking the census factor—

28,526. What do you mean by the census factor—give it to us in figures?—The number of persons.

28,527. How many persons per house do you reckon in your calculation?—It is a different factor—6.05 within the Metropolis, and in the remaining parishes outside 5.16 persons per house.

28,528. You get it in that way by using that multiple and taking, I suppose, the number of supplies in what year?—On the 30th June 1898.

28,529. In that way you get a certain population in 1888?—In 1898.

28,530. Then what increase per decade do you estimate upon that population?—30 per cent. we have taken our estimate at.

28,531. What population does that give you in 1937?—1,465,000.

28,532. The present population being what?—512,000 for 1897.

28,533. They will require, at 35 gallons a head, 51,275,000 gallons, if I have done it right?—51,275,000 gallons.

28,534. Therefore you will have to supply, in 1937, 51,000,000 gallons as against 25,000,000 gallons that you supply now?—Yes, taking that as the maximum against what we are supplying now. It would be about 21 millions now.

28,535. Therefore you would have more than double your necessary supply?—Yes.

28,536. On the other hand, the cost of that you say will be only 1,500,250*l.*, as against the million of capital expenditure to supply only 21 million gallons a day?—Up to the present time—that is quite right.

28,537. According to the test that Major-General Scott has more than once put to the witnesses, we have seen that seems a little disproportionate that an extra million should give you 30 millions supply, whereas your existing million has only given you 21 million gallons of supply?—We have based our estimate for the future expenditure on a sum of 35,300*l.* per million gallons to be obtained, and we have estimated that upon the expenditure of the past. The return, which I have handed in, of the distribution of capital outlay, shows the total of 466,000*l.* from 1870 to 1897. In 1870 the average daily supply was 5,900,000 gallons, in 1897 it was 15,400,000. Taking it on the millions there is

5 millions' growth to 15 millions—that is, 10 millions' additional quantity of water obtained during that time in the average daily supply, so that 466,000*l.* of capital outlay represents 46,000*l.* per million of average daily supply. Your Lordship will have noticed that the growth of the average daily supply in that way, by 10 million gallons, was accompanied by a growth also in the marginal quantity in reserve over and above that; for instance, the average daily supply of the year last past being 16 million gallons, and we having the power to pump 25 million gallons, there is a reserve margin of 9 million gallons. At the time the 5 millions of average daily supply was being given that reserve margin was very much less. Therefore the 46,000*l.* per million gallons covers not only the growth of the average daily supply but of the other, and if you take the quantity on the maximum quantity of water available in the years, you will find that it works out at 35,000*l.* per million.

28,538. What do you reckon as the maximum quantity?—25 million gallons

28,539. So that you say, for an expenditure of 35,300*l.* per million you have got the capacity of supplying 25 millions?—Yes.

28,540. In 1937 we have just got at the result that you will want 51½ millions?—Yes.

28,541. Therefore, it is an extra 26 millions?—Yes, on that basis.

28,542. And that is your basis?—But I have allowed something more.

28,543. Twenty-six times 35,300*l.* will surely come to more than you have estimated your total expense at?—I think not.

28,544. Would it not?—No, I think not; that would come to I think 917,800*l.*

28,545. You are right?—We have allowed for a larger quantity. I think your Lordship's calculation was on 35 gallons.

28,546. Yes?—We have taken 35 gallons plus 6 per cent., and that was referred to in the Royal Commission as being a proper margin.

28,547. You need not develop it?—And plus 20 per cent. also for the difference between the average daily supply and the maximum. So that my quantity per head upon that expenditure as calculated is 35 gallons plus 2 for the 6 per cent., that is 37, and then 7 more gallons for the 20 per cent. additional—that is 44 gallons per head. We thought that we would take the outside quantity and the outside figure.

28,548. (*Major-General Scott.*) Taking your capital employed at the end of 1897 at 1,009,567*l.* which is shown on this Table of Mr. Lass—

(*Chairman.*) That includes what was expended before 1870.

(*Major-General Scott.*) Yes, I refer to the Table on page 9 of Mr. Lass' Tables for 1897. Taking your supply of 25 million gallons a day—that is the maximum?—Yes.

28,549. It appears to me—I do not know whether you confirm it—that the cost per million gallons' daily supply is 40,883*l.*?—Yes, about that.

28,550. That compares with the cost of the additional supply of 35,300*l.* per million gallons?—Yes.

28,551. So that there is not a very wide discrepancy between the cost of the past supply and the cost of the future one in this case?—No. Then there is another way of taking it which I have adopted here, and that is taking the expenditure over the past 36 years—it is a long period.

28,552. Yes, you have told us that, I think?—I do not remember having stated it to the Commission, but taking the expenditure over the last 36 years, during which time we have added 17 million gallons to the maximum quantity, then that expenditure has been 600,000*l.*, and if you divide that by the 17 millions it gives you 35,294*l.* as the cost per million gallons of that additional 17 millions.

28,553. What puzzles me somewhat is this: I see that in your letter of the 13th February 1899, to the Commission, which is one of your letters on the subject of future capital expenditure, you give an additional population of 953,000 up to 1937 in the third column?—Yes.

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Mr. A. Dickson. 28,554. Then in a subsequent letter you increased the population to 1,504,350?—Yes.

28,555. But you only increased your outlay by 53,000*l.*?—Yes, it is entirely due to the difference in population. There is no alteration whatever in the basis of the estimate of expenditure.

28,556. But it is a very large additional population, the difference between 953,000 and 1,504,350?—The 953,000 you refer to is the additional population between 1897 and 1937.

28,557. Yes, I understand?—To that you must add the present population.

28,558. (*Mr. De Bock Porter.*) You anticipate getting the whole of this additional quantity which you require up to 1937 out of your existing wells and wells of similar character in your area, do you?—Yes, and from an extended area.

28,559. Do you think you may buy land outside your present area, with a view of sinking fresh wells?—I think we shall have to extend our area before that time. We are already applied to to take over two adjacent parishes.

28,560. You have one of the largest areas at present, have you not?—Yes, 179 square miles.

28,561. But you contemplate getting the whole of the future supply from new wells?—Certainly. Before leaving the question of estimates, may I just put in this? We have evidence that the rate of increase of the population is progressing at a decremental rate; that it is not progressing as rapidly as it was between 1881 and 1891 in the district.

28,562. How do you show that?—I have before me this comparison. The whole of the parishes we supply within the metropolitan area, including Camberwell and Rotherhithe, that we supply in part, had a population in 1881 of 507,243, in 1891 that population was 641,671, being an increase in the 10 years of 26·5 per cent. Taking the returns from the local census of the Metropolis in 1896 for the same parishes, the populations have only grown to 691,596, which is equal to a percentage increase for the 10 years of 16·16 instead of the 26·5. Your Lordship will see that there is a very substantial decrease in the rate of increase of the population.

28,563. Do you know what figure of decennial increase was taken for your district by Lord Balfour's Commission?—No, I do not remember that we have any means of knowing what that figure was for our district.

28,564. Did you lay before Lord Balfour's Commission that figure of 26·5 per cent. increase?—I do not think that figure was adduced there.

28,565. But they must have had some figure upon which they based their average of 18·2 for the whole of Water London and Greater London?—Yes. I think that figure was furnished by the Registrar-General's Department quite independently of the companies.

28,566. At any rate, in fact between 1881 and 1891, your rate of increase was 26·5 per cent.?—Yes, in the metropolitan portion.

28,567. Only the metropolitan portion?—Yes. We cannot give you the other because we have not had a census for the other part.

28,568. There was one in 1881 and 1891?—Yes, but you will have observed I have been giving you subsequently the 1896 census.

28,569. I know, but do let us keep to one thing at a time. When you gave me the figures for 1881 and for 1891, I understood that was your whole district?—No, my Lord, I think I said the Metropolis only—I am sure.

28,570. Then why do not you give it to us for your whole district?—Because we have not a similar census.

28,571. Not for 1881 and 1891?—Not in 1896 to compare.

28,572. Not 1896, but 1881 and 1891?—Yes.

28,573. Then can you give it to me for those years for your whole district?—Yes, I can give you that. The figure was 30 per cent. between 1881 and 1891 for the whole district.

28,574. Let us get that clear; 26·5 within the metropolitan area?—Yes.

28,575. And 30 per cent., including the whole district, including the metropolitan area?—Yes.

28,576. Therefore the outside districts were increasing faster than the metropolitan area?—Yes. In the Bromley and Chislehurst district, which includes the whole of Beckenham, the increase there was at the rate of 39 per cent. and in the Dartford Union at the rate of 28 per cent.

28,577. At any rate, the average of your whole district between 1881 and 1891 was a decennial increase of 30 per cent.?—Yes, that is the basis we took from the figures that we could get—as near as we could approximate it.

28,578. (*Mr. De Bock Porter.*) It is only within the metropolitan area that the rate has gone back?—Possibly.

28,579. (*Chairman.*) You cannot tell that?—I cannot tell that.

28,580. (*Major-General Scott.*) The average decennial increase in the whole of the outer ring was about 50 per cent., was it not?—I do not remember.

28,581. It was something like that?—I do not remember.

28,582. (*Chairman.*) How have the number of your supplies increased outside the metropolitan area since 1891? Can you give us the number of supplies you had in 1891 in your extra-metropolitan area?—I do not think I have those statistics.

28,583. (*Mr. Littler.*) I suppose you could easily get them, could you not?—I could get them, but not very easily. It involves a count.

28,584. (*Chairman.*) One would have thought that was an approximate way of getting at the increase of population in the outside area to take the supplies in 1891 and the supplies in 1898, and then use your multiplier of 6 and a decimal?—Yes, that would be so.

(*Mr. Littler.*) If your Lordship wishes to have them, we shall take care that they shall be got, even although it involves trouble.

28,585. (*Chairman.*) No, I do not know that I need trouble you. You have not worked out, have you, what would be the population of your total district if you applied the Balfour average decennial increase of 18·2?—No, I have not worked it out on that basis at all, because I thought that 18·2 would not be applicable to us.

28,586. Of course, it is far too small for your district?—I have got the 30 which we take to be our portion of the 18·2.

28,587. Thirty may be right or may be wrong. I do not know. Then as to the rental values in your district. Is the property in your district property of a low rental or not?—Yes, distinctly low.

28,588. Just give us the figures about it?—The great majority of the houses are under 20*l.* net value. In 1891 there were 48,774 out of 71,459, or about 70 per cent. below 20*l.* per annum, where those charges fall upon the owners; and there were 22,685 only above 20*l.* per annum where the charges fall upon the occupiers.

28,589. When you say the charges fall upon the owners, that is, I suppose, by arrangement; it is not by law?—Yes, by law. The Company's Act specifies that where the house is of a value not exceeding 20*l.*, the rate shall be paid by the owner instead of the occupier.

28,590. Then, although that is a disadvantage to you in the sense that the houses are low rented, it is an advantage, I suppose, in the sense that you get your rates with greater security?—Yes.

28,591. The owner is a better paymaster than the occupier as a rule?—No doubt, because of the difficulty of collection where the tenancies are so short.

28,592. (*Mr. De Bock Porter.*) Is there any compounding rate for those very small houses? Do you compound with the owner?—No, if the houses are not occupied during the quarter no rate is charged; if occupied the rate is charged.

28,593. (*Chairman.*) Then you take into account the empties in settling with the owner?—Yes, if the house is empty for the whole quarter, as I say, there is no charge whatever.

28,594. (*Mr. Littler.*) My Lord, our charges were fixed in 1864 after hearing counsel for the local authorities, so that we have nothing to do with the Act of

1852 at all. (*To the witness.*) That is so, is it not?—That was so.

28,595. (*Chairman.*) Your scale of charges was fixed in 1864?—Yes.

28,596. Was it throughout your district or only in certain parts of it?—Throughout the whole district in 1864 and extended to the other section in 1877 and 1888 with the proviso for an addition of 25 per cent. for supplies above 400 feet above Ordnance datum to meet that case of the district of Knockholt which rises to 780 feet.

28,597. Have you compared your own scale with those of the towns that have been put before us as examples by the London County Council?—Yes, and I have a table here showing the charges on different rent values: 5*l.*, 6*l.*, 7*l.*, 8*l.*, 10*l.*, 12*l.*, 15*l.*, 18*l.*, 20*l.*, 25*l.*, 30*l.*, 35*l.*, 40*l.*, 45*l.*, 50*l.*, 60*l.*, 70*l.*, 80*l.*, 90*l.*, and 100*l.* rental.

28,598. I cannot understand what you are talking about. Your style is so brief. What are all those figures?—Those are the figures of rental value which I have adopted for the purpose of comparison. Taking those eleven towns where their basis is the gross value, and taking our own scale, and applying it to a rateable value corresponding to that gross value and comparing the two, the table shows that the average of the percentage of the charges on the gross value in those 11 towns is 5·85.

28,599. What do you mean by 5·85; is that pounds or what?—5·85 per cent., and the average of the percentage of the Kent Company on the like basis is 5·05 per cent.

28,600. (*Mr. Littler.*) Will you take the eight towns on the rateable value, that is the other point?—Then, as to the eight towns on the rateable value, the average of the percentage of the charges upon rateable value in these eight towns is 6·95, and in the case of the Kent Company it is 5·61.

(*The witness handed in Table. See Appendix S, 11.*)

28,601. (*Mr. De Bock Porter.*) Is not this rather extraordinary that in this table you are taking a house up to 45*l.* a year, and only giving one water closet?—I have another table to cover houses at 30*l.* and upwards with two.

28,602. (*Chairman.*) But you are asked about this table?—I took it so, because there are a great many houses up to that value which have only one water closet, and I have amended the table for the purpose of comparison by taking houses of 30*l.* gross value and upwards with two water closets and a bath, and, if you will allow me, I will give you the figures resultant from that table on that basis. The average of the 11 towns works out at 6·07 per cent. on the gross value as compared with the Kent Company's 5·52 per cent. Then taking those towns charged on the rateable value with 25*l.* of such value and two water closets and a bath above, then the average of the percentage in those eight towns is 7·11, whilst the average of the percentage of the Kent Company on the same basis is 6·21. So that however you take them the scale is distinctly in favour of the Kent Company's rate, and shows it to be extremely moderate.

(*Mr. Littler.*) It is a fact, is it not, that there are 2,841 houses of 24*l.* rateable value, out of which only 730 have two water closets.

(*Mr. De Bock Porter.*) That is a 24*l.* house. They go up to 45*l.* in this table.

(*Mr. Littler.*) Yes, I am aware of that. That is an illustration from one table which I happen to have before me.

28,603. (*Chairman.*) Will you put in that second table which you have just been quoting from?—Yes.

(*The witness handed in Table. See Appendix S, 12.*)

28,604. In this table a great many of the 11 towns are below your rate?—Yes, some are below.

28,605. Hull is below, Dundee is below and Glasgow is below?—Glasgow is below. Then there is the public rate there.

(*Mr. Balfour Browne.*) It is including the public rate, is it not, in Glasgow.

28,606. (*Chairman.*) This second table that you have put in shows that your rate compares unfavourably with them?—Only in some cases.

28,607. In the majority of cases?—For instance, in Nottingham the percentage there is 6·07 as against

our 5·52. In Bradford it is 7·90 against our 5·52. In Sheffield the rate as charged in 1897 was 7·57, and as reduced in 1898 6·91 against our 5·52. Then Oldham 6·73, and outside the borough 7·73 against our 5·52. Huddersfield is higher than we are, 8·89 against our 5·52. Bolton is 6·13, and Halifax, 6·54. Then taking those on rateable value our average is 6·21, Leicester is 6·60, Swansea 8·70, Cardiff 6·02, Birmingham 7·39, Northampton 9·23, Blackburn 8·07, Liverpool 5·62, and Manchester 5·30. What I have pointed out in the foot of that table is this, that in those places where there is a public rate if the amount which that public rate produces had to be gathered from the water consumers only, it would make a corresponding addition to the rate in the £, which is the proper sum to compare with our charge.

28,608. I quite follow that. As long as it is a private company that manages the water supply one cannot well introduce the system, but it does strike one as being a fair thing enough, that all owners of property or ratepayers in a district should pay something for the public supply?—Yes.

28,609. And that that should go in case of the domestic supply which of course belongs to the individual?—Yes.

28,610. Watering the streets, flushing sewers, putting out fires—all those are general benefits?—And are usually charged extra.

(*Mr. Littler.*) In Birmingham and in some other places they do charge that in addition.

(*Chairman.*) I am quite aware of that.

28,611. (*Mr. Littler.*) Water for public purposes is charged and paid for by the departments?—Yes, and in Manchester also. Then some reference was made to the 30*l.* houses having two water closets and a bath, and to the scale which is applicable to that case. I thought it would be interesting to put these statistics before the Commission. It was assumed that every 30*l.* house had two water closets and a bath, but out of 2,841 houses of a net value of 24*l.*, which would be the corresponding net to the rent value of 30*l.*, only 730 or about 1 in 4 are so provided in my district with two water closets.

28,612. (*Chairman.*) With two water closets?—With two water closets and a bath.

28,613. (*Mr. De Bock Porter.*) Most of them have two water closets, I presume?—436, or one in 6 or 7, have two water closets only without the bath, and 170 or about 1 in 16 have one water closet and 1 bath, and 1,525 or more than half have only one water closet, which is supplied without extra charge, so that instead of all those 30*l.* houses producing to the company the full rate of 2*l.* 5*s.* with two water closets and a bath according to the scale, the average rate for the whole is only 1*l.* 13*s.* 11*d.*, the average of those houses inside the Metropolis being 1*l.* 14*s.* 1*d.* and outside 1*l.* 12*s.* 9*d.* Then many of the recently built houses of this class are fitted with two water closets and a bath, and they are designed for two families, and they have now two entrances.

28,614. (*Mr. Littler.*) With of course a much larger population?—That involves a greater use of water.

(*Mr. De Bock Porter.*) Would they be rated as two tenements?—In many cases they are rated as separate tenements.

28,615. Two separate tenements?—Yes.

28,616. Then do you mean each tenement has a separate bath?—There are cases where that is so; but there are cases also where the house is furnished with a water closet for each tenement, and a bath which they use in common.

28,617. (*Chairman.*) I believe I have not asked you about the position of your district with regard to competition?—No, I think not.

28,618. How does your company stand with respect to competition?—When the company was formed, there was a company called the Ravensbourne Waterworks Company in existence, and the Act stipulated that the Kent Company should not commence its operations till it had bought the rights of the existing company. That was in 1809, and from that time downwards there has been no competition between us and any of the other companies.

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28,619. I suppose you will go so far as to say that that statute amounted to a prohibition of competition?—Certainly between ourselves and our predecessors.

28,620. Between yourselves and the only company in existence in your district?—At that time. Their rights were secured to them under letters patent which gave them the exclusive right of supplying water for a period of 500 years within the Manors of Sayes Court and East Greenwich; that charter was acquired by the Kent Company, and it holds it to-day.

28,621. Then you have got the exclusive right now in those two districts?—Yes, we have.

28,622. So that without a breach of those letters patent no competition in those districts could be started against you?—That is so.

(Chairman.) Is there anything else that I have omitted to ask about, Mr. Littler?

(Mr. Littler.) Yes my Lord, there is the question of collecting the rates separately, and then there is the question about the water supplied for public purposes.

28,623. (Chairman.) What have you to say about the water supply for public purposes?—That the statement that in Birmingham there was no charge for the supply of water for public purposes such as street watering and urinals and so on was made under a misapprehension to the Commission. I find on enquiry that it is not so—that those supplies are paid for by the public works department of the corporation.

28,624. That is that one department of the corporation pays the other department?—Yes, and that is so at Manchester.

28,625. Birmingham, Manchester, and any other town?—I am not quite sure about Liverpool, but I think it is so there partly. Will it be necessary to read to your Lordship the letter from the secretary of the Birmingham Corporation?

28,626. I will take it you have got a letter which can be produced if there is any doubt about it?—Yes.

28,627. (Mr. Balfour Browne.) Will you let me see it?—Yes. (The letter was handed to the learned counsel.)

(Chairman.) Is there anything else, Mr. Littler?

(Mr. Littler.) There is the question of the commission on collecting.

(Witness.) Some enquiries have been made as to the possible saving to be derived in commission paid to collectors for collecting the rates in the event of a transfer, and I thought it would be interesting to the Commission to know what was the condition of things in this respect at Liverpool, Manchester, and Birmingham. At Liverpool, when the companies were purchased, the existing collectors were taken over, and the separate collection was continued for years. The overseers at that time separately collected the poor rates. Subsequently the corporation took power to collect the sanitary rate, and arranged to amalgamate the collection of the water rate and the sanitary rate by one staff. The sanitary rate is termed in the notice a general rate, and it includes charges in respect of debt, general expenditure under the Corporation Act of 1893, and the expenditure under that rate is for paving and sewerage, cleansing streets, cleansing ash-pits, removal of house refuse, sanitary departments, insanitary property, artisans' dwellings, hospitals, lighting, fires, police, street improvements public parks and places of recreation, and museums. The expenditure in the poor rates, and for other charges than the foregoing, are now collected by the overseers, through their own separate staff of collectors.

28,628. (Chairman.) In all these I am watching for water rate. You have not mentioned the water rate in all this immense enumeration?—I think I mentioned it in this way, when I said subsequently the corporation took power to collect the sanitary rate, and arranged to amalgamate the collection of the water rate and the sanitary rate by one staff.

28,629. You did not mention the water rate amongst that list of things you read out, with which we have nothing to do?—That followed.

28,630. (Mr. De Bock Porter.) Your statement comes to this, does it not, that when the Liverpool Corporation took it over, they took over the collection in exactly the same way, but subsequently they added to it the collection of another department?—Subsequently they have added to the duties of the water rate collector the collection of this general rate, but the poor rate,

and any other rates, are collected at this day by a separate staff of collectors, through the overseers.

(Mr. Littler.) The borough rate is by a separate staff. The borough rate is not included in the sanitary rate, of course. If I remember rightly, the borough rate is collected with the poor rate.

28,631. (Chairman.) Then there has been an economy of staff, so far as I can make out from this mass of detail?—No, the only economy would be the transferring of this particular rate to the water rate collectors to collect, instead of the other staff of collectors, the main point being that there are two separate collections made in the borough.

28,632. Yes, but there are two rates now collected—the sanitary rate and the water rate collected by one staff, instead of having a separate staff for each?—Yes, but the sanitary rate would have been otherwise collected, I apprehend, by the same collectors who collect the poor rate.

28,633. Then all you have been telling us is wholly immaterial?—No, I beg your pardon. It is material to this point, that at the present day there are two separate staffs of collectors to collect the rates in Liverpool.

28,634. Then have you any other municipal facts to state?—There is another thing with regard to Liverpool. Liverpool demands the whole of the water rate in one sum, in one payment for the whole year, and that, of course, is a considerable advantage to them in the cost of the water rate collection. In Manchester the collection is entirely separate, just as in the case of an existing company. So also is the gas collection, the poor rates, and the other rates are also collected separately by different collectors. Here again, the demands for the water rates are made in one sum for the whole year.

28,635. (Mr. Littler.) I think even the gas and water, although both belong to the corporation, are collected by separate collectors, are not they?—Yes.

28,636. (Major-General Scott.) Have you ascertained what is the reason for this proceeding of separate collections. Has any reason been assigned for it?—From what I could gather it is for the general convenience. It is more convenient to have the collections in this way than to attempt to put the whole into one set of collectors and one demand, because of the inconvenience of the public having to meet their whole charges in one payment. The same thing prevails at Birmingham. There is a separate staff of collectors there for the water account, and it has been maintained throughout since the company was taken over.

28,637. (Sir John Dorington.) They collect them at different periods of the year, I suppose?—Yes, at Birmingham I was told that the success of their collection was principally due to the fact of their making it at a different time from the other collection for the borough rate.

28,638. One in the spring and one in the autumn probably?—Yes, at different times, I do not know the exact periods.

28,639. (Mr. De Bock Porter.) Is it not the fact that in Manchester, although the demand is made for the year, it is payable half-yearly?—I will hand the honourable Member of the Commission this demand note. (Handing it.) I do not see any indication of it on this demand note.

28,640. (Mr. Littler.) It may be endorsed on the back?—It may be, but I do not see that it is. As to the comparison of payment for the collection between a municipal body and the companies, I submit this, that the Liverpool Corporation has an outside district of about 90 square miles wherein they act as a water company, and they collect the rates there by a separate staff of collectors, and in that district their payment to those collectors amounts to just a little over 4 per cent. as a commission. They are paid by salary, but it comes to 4 per cent. on the amount of the water rates due and that will compare with 3 per cent. or a lesser commission in our case.

28,641. (Chairman.) You pay your collectors 3 per cent., do you, on the water rate collected?—Some of them 3 per cent. and some 2½; in the case of some of the older collectors who are unable to do their work when they get advanced in years, we reduce the extent of their work and give them an additional commission as a sort of quasi superannuation to allow them to

continue on. The 3 per cent. is our normal commission rate and that would compare with the cost of 4 per cent. to the Liverpool outside district.

28,642. In the result, then, you are of opinion that if any public body bought all the eight water companies, they could not save much in collection?—I do not think they could without considerable public inconvenience, and the precedent in those three towns points to the maintenance of a separate staff of collection—a separate collection entirely.

28,643. Of course if the London County Council were the purchasers, they might use the rate collectors in London?—I do not see how they could, because such a large portion of rental must be collected separately upon separate claims and separate bills. There is such a large portion of rental for water supplied by measure and for special purposes there is a separate charge, and therefore those demands must be made out specially.

28,644. Yes, but I suppose even now it is not your collector who makes out the demand. That is made out in the office of the company?—Yes.

28,645. The collector simply has to go and ask for the money?—In my company the collector has to render assistance also in making out invoices from the details furnished.

28,646. Invoices?—In sending out these demands.

28,647. Demand notes, you mean?—Yes.

28,648. (*Sir John Dorington.*) Who makes out the demand notes? Is it the collector, or are they made out in your office?—The demand notes are made out by the collectors from a duplicate ledger, which is placed in their hands—a duplicate of the office ledger.

(*Mr. Pember.*) Mr. Wybroo said the same, if you remember, about the West Middlesex Company, and now I am told that it is so with most of the companies. There is an enormous amount of clerical work done by these collectors that would have to be paid for elsewhere if you handed over their collection to the ordinary collectors. Putting it into money of my total of 182,000*l.*, about 81,000*l.* would be represented.

28,649. (*Chairman.*) What is that total of 182,000*l.*?—182,000*l.* of rental in the year. There is about 81,000*l.* of that represented in these items which would have to be separately claimed.

28,650. Do you mean such things as baths, and so on?—And trade supplies.

28,651. And gardens?—And meter supplies—cases where the domestic and non-domestic supply is furnished in common.

28,652. Is there anything to prevent you now collecting your rate annually instead of half-yearly?—I assume so. The rates are payable quarterly in advance strictly. We apply for them at the end of the first quarter including the coming quarter in the claim. I am quite sure that if we asked for three quarters in advance we should be resisted.

(*Chairman.*) A man may die.

(*Mr. Pember.*) As a matter of fact, I do not believe you would get the year's rent.

(*Mr. Littler.*) Under the Waterworks Clauses Act it says the rate shall be paid in advance by equal quarterly payments, and the first payment shall be made at the time, and so on. We could not ask for it for a year.

(*Chairman.*) You could not ask for it a year in advance, but you might wait till the end of the year and then ask for four quarters.

(*Mr. Littler.*) Your Lordship sees we equalise matters and save trouble. We get the benefit of one quarter, and give him the benefit of the other.

(*Witness.*) The funny thing is that on the claim for the Manchester water rates they set out that the rates are payable on the respective quarter days, notwithstanding that they are demanded for the whole year in advance.

28,653. (*Chairman.*) Corporations do do these things?—You will see at the top of that paper the demand note for the year, and in a paragraph at the foot there you will see the several quarter days set out.

28,654. (*Major-General Scott.*) I gather from what you say that it is inconvenient to a vast number of people to pay more than a small sum on account of these taxes at one time?—Yes.

28,655. And that that governs the policy of collection. The endeavour is made to spread these payments over the year?—Yes, I think that is so. We find in our district that the landlord's claim is first attended to, then the parish rates are attended to, then the gas claim is responded to, and then comes the water rate.

28,656. (*Chairman.*) But I see this demand note does say distinctly the water rate is payable in advance by equal quarterly payments on the 1st of January, the 1st of April, 1st of July and 1st of October?—Yes.

28,657. (*Sir John Dorington.*) So that they are not bound to pay all this at once?—No, they are not bound to pay it all at once, I assume. The principal officer at Liverpool told me that about 80 or 90 per cent. of their demands were paid at once—early—and in that case if they are not paid by October, I think it is, then duress is applied.

28,658. Do not you think you could claim for the half-year, and also state that the sum for the whole year may be paid at once?—No, certainly not.

28,659. Do not some other companies in London do so?—I do not know of any one.

28,660. Does not the Chelsea?

(*Mr. Rickards.*) No.

(*Mr. Littler.*) I think if you look at your poor rate, you will see you have the privilege of paying in two instalments, but you never do. I know it used to be so when I had a house down at Westminster.

(*Mr. Rickards.*) I am told we give the particulars of the charge for the whole year, but we only ask for the half-year at a time.

(*Sir John Dorington.*) I quite agree there.

(*Mr. Rickards.*) It is the quarter's water rate that has already past—the past quarter and the next quarter.

28,661. (*Sir John Dorington.*) Do you wish to refer to some evidence that Sir Alexander Binnie gave with a view of contradicting it?—Yes.

28,662. Would you state where Sir Alexander Binnie was wrong?—With reference to the statement that the water rates at Bradford were charged upon the rateable value, in compiling the table which I have submitted to the Commission, I observed that the town of Bradford had a charge upon the gross value, and I therefore made an enquiry, and I find that the charges for the domestic supplies in Bradford were now and had been from the days of the company charged upon the gross value.

28,663. So that a different practice prevails in Bradford from what prevails in the Metropolis?—Yes.

28,664. Or generally elsewhere?—There are those cases of the 11 towns on that table where the charge for water is upon gross value.

28,665. In the whole of that table of yours?—In that table of mine there are 11 towns.

28,666. Where the charge is on the gross?—Where the charge is on the gross, and there are other 9 towns where the charge is upon the rateable value.

28,667. (*Chairman.*) Of course the statutes authorises that in each case?—Yes.

28,668. That is the different local Acts do?—Yes.

28,669. You say, yes, but have you looked at the statutes to see whether they are not the same?—Yes, I looked to see that the gross value was authorised in the Bradford case.

28,670. They are not under the same misapprehension that the London companies were before Mr. Dobbs came to their assistance, are they?—No, and Sir Alexander Binnie fell into the mistake of saying that they at once without any cavil conceded the point, but what was actually conceded was this, that in making their estimate of the gross value, they took the rateable value for the time being, and made an addition to it which gave them a gross value of about 17 per cent. above the proper gross value, and the only thing that they surrendered when the Dobbs judgment took place, was to correct their mistake, and drop down from the excessive gross to the proper gross.

28,671. I thought you said they took the net value, and added 17 per cent. to it?—They took the net value and added a percentage to it, which made the gross so ascertained 17 per cent. above what it ought to have been.

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28,672. (*Major-General Scott.*) Have you made any attempt to ascertain what your probable gross profit would be on this additional capital, which you estimate will be spent between this time and 1937?—No.

28,673. You have not?—No, I have not made any attempt to calculate that.

28,674. It could be done, of course, on the basis of your present return per supply, or in some other way of that kind?—Do you mean that the same capital conditions should apply to the capital of the future, and to the rates, and so on—that everything should be co-existent?

28,675. Assuming that it did, what would be the gross profit on that additional capital, and assuming that the sinking fund clauses did apply, what would be your contribution to the sinking fund on that capital in 1937; that is the question?—I have not worked it out.

28,676. (*Chairman.*) That is assuming that the whole of that new capital is raised by debentures, because, I suppose, you would not tie yourself down to debentures for the whole of that million and a half?—I do not know whether Parliament would so far extend the principle as to permit it to be raised by debentures, or not. Of course, that would be altering the fundamental principle of 25 per cent., or 33 per cent., of the debenture stock to the ordinary capital. On the other hand, there is the security of the water rates, and it is possible that Parliament might authorise the capital of the company—

28,677. How do you contemplate raising that million and a half between this time and 1937?—I can only say by the further money powers which Parliament will be good enough to give us, and which we assume will be somewhat consistent with the past condition of things.

28,678. You mean part shares and part debentures

(*Mr. De Bock Porter.*) With no auction clauses.

(*Witness.*) With the auction clauses, of course, that would make the price at which the ordinary capital would be issued equivalent to the market price of money for the time being.

28,679. (*Chairman.*) How do you contemplate raising this money—do you contemplate applying for powers to issue new shares, or only to issue debentures?—I have not considered that point.

28,680. Debentures mean, you know, not only auction clauses, but a sinking fund?—I do not know why they should want a sinking fund, if we are to go on. The sinking fund was imposed entirely in view of an imminent purchase, and it was only conceded on the ground that there was to be an imminent purchase. Parliament acceded to the application of the proposed purchaser not to create any new pecuniary interest which he would have to buy up. But if there is not going to be any purchase, I cannot see how that fund can be consistently continued. Moreover, it would be taking away from the consumers in my district that reversion to their share of the surplus profits to which they are entitled, and handing over that money to the Chamberlain of the City of London, or someone else, to be applied for other than their purposes.

28,681. (*Major-General Scott.*) Supposing Parliament took the view that, as regarded future capital expenditure, the company were to be only managers and to get a managing profit, and no other profit, because that is really what the effect is of the sinking fund clauses—

(*Mr. Pember.*) Till they were bought.

(*Major-General Scott.*) Yes.

(*Witness.*) Then it would be, I think, in the interests of the consumers in my district, so many of whom are outside the Metropolis, and the greater number of whom will be outside the Metropolis, that the sinking fund should be dropped and that they should be allowed to take their share in the reduction of charges and get the benefit direct.

28,682. (*Mr. De Bock Porter.*) When your company comes to make payment under the sinking fund clauses, will it not be somewhat handicapped, if at that time you are paying 14 per cent. on your old stock—will that not raise the price unduly of the amount that you will have to pay the Chamberlain?—Of course, the larger the dividend the larger the contribution,

28,682a. So that your contribution to the sinking fund will be larger than that of almost any other company proportionately—

(*Mr. Pope.*) Because of the 14 per cent.

(*Mr. De Bock Porter.*) Yes, because of the 14 per cent.

(*Witness.*) I think we have 100,000*l.* of debenture stock to issue, and I think the burden of that stock upon the company's profits will be just over 10 per cent. including, of course, the 4½ per cent. payable to the holders for interest—the total burden will in that way be just over 10 per cent.

(*Mr. Balfour Browne.*) I do not propose to ask the witness any questions.

The witness withdrew.

28,683. (*Chairman.*) There was some explanation that a witness from Croydon wished to give.

(*Mr. Balfour Browne.*) Yes, Mr. Howard Martin.

(*Mr. Pember.*) Before that is done, just let me say at once, as it may save your time, and that is advisable, that there is no doubt Mr. Wilkins did make a mistake.

(*Mr. Balfour Browne.*) Forgive me.

(*Mr. Pember.*) I do not want to be forgiven, I assure you, I merely want to tell Lord Llandaff that, as a matter of fact, Mr. Wilkins did make a mistake and he is anxious to say so, and I have a right to say so for him.

(*Mr. Balfour Browne.*) And I have the right to call my witness all the same.

(*Mr. Pember.*) That you can do; I do not care two straws what you want to do. I only care what I want to do.

(*Chairman.*) Please go on.

(*Mr. Pember.*) I want to say that Mr. Wilkins made a mistake, and he wishes to say so. As a matter of fact, the original lowering of the rates in question took place in July 1894. They had received complaints as to the quantity and quality of the water, and they believed that those complaints really pointed to a deduction of the rates, they, therefore, did so reduce them. Therefore, Mr. Wilkins was quite right in saying, in the first instance, that they were not reduced in consequence of competition; but Mr. Wilkins had forgotten—and that is the mistake he made—that subsequently in the month of October, there was a meeting between the two engineers, the engineer to the Corporation of Croydon and the engineer to the Lambeth Company, and that in the course of that interview, it was, as it were, said as follows: "If you keep your rates down to the point to which you have reduced them, we will not come to peto with you," and he said, "Very well, then we shall keep them down," and, as a matter of fact, they have been kept down since then in consequence of what you may call the fear of competition—there cannot be a doubt about it. That is the mistake that Mr. Wilkins wished to correct. Now I leave the responsibility of wasting your time by further evidence upon my learned friend.

(*Mr. Balfour Browne.*) There was also a further statement made by Mr. Wilkins that they had taken away from the Croydon Corporation in one year 69 houses.

(*Chairman.*) Not taken away?

(*Mr. Balfour Browne.*) Houses that might have been supplied by Croydon.

(*Chairman.*) Yes, 69 houses.

(*Mr. Balfour Browne.*) The fact is that it was under this promise that they would keep down their rates to the Croydon rates, that we did not lay pipes in those streets which they had pipes in; and those 69 houses are put upon their pipes in streets in which we promised not to compete and where we have no mains to-day.

(*Mr. Pember.*) I believe that is true with the exception of a block of about 20 houses for which I do not care two straws. But Mr. Wilkins did not say that he took them away; he merely said that he had got them. There is nothing in it.

(*Mr. Balfour Browne.*) Then, my Lord, there is also a question—I have Mr. Howard Martin here, but it is going by explanation instead of by evidence. Mr. Wilkins said that we were at the end of our tether;

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as a fact, I can prove by Mr. Howard Martin, that we have got a new source of supply, and although at one particular time, we gave a warning that the people were to be careful with the water, we have never been really short, and now we are making provision for the future supply in large quantities.

(Chairman.) I dare say that is so.

(Mr. Pember.) I should not wonder.

(Mr. Balfour Browne.) I dare say not; you should not wonder at anything Mr. Wilkins has said.

(Mr. Pember.) Mr. Wilkins was quite right; at the time they were short. They may have got a new supply coming in now, but I know nothing about it.

(Mr. Balfour Browne.) Under these circumstances, as Mr. Wilkins has withdrawn everything he said with regard to Croydon, I do not want to call my witness.

After a short adjournment.

Sir FREDERICK DIXON-HARTLAND, Bart., M.P., called and examined.

28,684. (Chairman.) You are Member of Parliament for the Uxbridge Division of Middlesex?—Yes.

28,685. And an alderman of the Middlesex County Council?—Yes.

28,686. And for five years a member of the Thames Conservancy Board?—Yes.

28,687. And Chairman of that Board?—Yes.

28,688. I think we know, and we need not trouble you to give us the powers of supply of the different companies; we have had them amply proved before us. So I will take you at once to the points you want to raise. In the first place, as to allowing the companies to take their authorised supply upon an average of six months instead of day by day—what do you say to that?—We have no objection at all to that, if it is done in such a way that we have the command, so that they cannot, in fact, take a very small quantity when the river is full, and take a very large quantity when the river is empty. We are a navigation authority, and our great duty is to keep the navigation of the river in a proper state. Last year only 43 million gallons at one time went over Teddington Weir. That was really a great disadvantage to the navigation, and would be still more, probably, if we have a series of those short amounts passing over, which would be very deleterious for the navigation of the river. We are rather afraid that the companies might, if they had an average, take less water when there was a large quantity in the river, and come to us in the very dry season, and take a great deal more, which would be very bad for us.

28,689. What means have you now of checking the amount that the companies pump every day?—They have to make a return. They make their return to our officers, who check them.

28,690. That is asking the fox to say how many chickens he has taken?—It is by Act of Parliament. The Act of Parliament gives the orders how they are to do it, and our engineer checks it.

28,691. There is machinery in the Act, is there, for that?—Yes, absolute machinery.

28,692. You would be content with a six months' average, provided there was some stipulation that the average should be exceeded only when the river was full?—Three months, I think, would be better than six; but we do not wish to in any way interfere with the water companies as long as we do our duty with regard to the navigation.

28,693. What I mean is that it strikes one's mind as ridiculous that you should allow millions of gallons to go down the Thames, and not be allowed to take advantage of that full supply when you can get it?—We have no objection to that at all—not in the least. Our difficulty is that they should not take it when those millions of gallons are flowing down the Thames, and should want to take it when a very small quantity is going down.

28,694. (Mr. De Bock Porter.) You would like to control them when the flow is very low?—That is it. We want to have powers of restriction that they could not take it when the river was below a certain amount, even when they are taking it on the average.

28,695. (Chairman.) It is suggested to me that we have said something in our first report that has alarmed you?—No; it was that section 41—

28,696. I thought, as far as I can recollect it, that we said distinctly that we saw no objection to taking water when the river was full?—Yes; but we want some clauses in some way put in—

28,697. To protect you?—To protect us so that it cannot take place.

28,698. That is quite sensible and quite right, if I may say so?—And we should like it done if you could

recommend it, with a very heavy penalty put on to prevent them doing it, because you see that the very time that they want to take their water would be the very time when the courts would not be sitting, and when there would be very great difficulty in getting an injunction.

28,699. Cannot you get an injunction from the vacation judge?—You can, but it is far more difficult to get; you cannot get it in the same way from a vacation judge as you can when the Courts are sitting.

(Chairman.) I thought it was easier.

28,700. (Sir John Dorington.) Does the information, what water the companies are taking, come to you with sufficient rapidity?—Yes.

28,701. Every day or every week?—It comes to us monthly, but we always check them, we know what is going on pretty well—our officers know.

28,702. The machinery is such that you get accurate returns, you think?—Yes, we are quite satisfied with the machinery.

28,703. I assume that you adhere, as your officer has already told us, to the 200 millions limit?—Yes, that is a scientific thing, and we quite agree on the Board to that as the lowest limit.

28,704. (Mr. De Bock Porter.) You want that as an irreducible minimum?—We want, unless it is by nature, of course—to make that the irreducible minimum.

28,705. If it is very low indeed, you want them to abstain from taking their existing quantities?—We cannot want that as long as they have their present powers. However the river is, we are obliged to let them have what Parliament has given them at present. But they can only take per diem, and this is an alteration, and if they are allowed to take the water by average, they can take, we will say, half the quantity when the river is full, and when the river is very low, in order to make it up, they can take per diem double the present quantity that they are allowed to take when it is low water.

28,706. (Sir John Dorington.) If they had already taken a large part of what they are entitled to throughout the whole period of the year, then, at the dry time, their take would be very much less?—Yes, we have no objection to that.

28,707. So you would be better off?—But that is not likely; they will be wanting it most in the dry time.

28,708. (Chairman.) Assuming this system of storage reservoirs is carried out, you know they will fill their reservoirs as soon as they can, at least, they would be very short-sighted if they did not?—Storage reservoirs is what we want to drive them into. If the reservoirs exist, then it would not be the same, but the proposal for the average take is without storage reservoirs, except in the case of the Staines Reservoirs and the Southwark and Vauxhall. None of the other companies have got reservoirs at present.

28,709. Not to any large extent?—That is so.

28,710. But they have all got some storage running from 15 days upwards?—I do not think it is as much as 15.

28,711. It is now?—It may be. We want 90 days, if we can get it.

28,712. (Major-General Scott.) Should you not prefer to have the rule which is applied to the Staines Reservoir take applied to the present take of the companies?—We have no objection to that, because the Staines Reservoir take is after they get into working order. We have no objection to that take with the other companies on the same grounds.

28,713. It has been suggested to us that these conditions of not taking water unless the river is

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flowing at a certain quantity should be applied to the quantities which the companies take now up to 130 millions a day under their old arrangements?—Are you talking of average, or are you talking of the powers of taking?

28,714. At present, their powers are that they can take 180 million gallons a day without any reference whatever to the condition of the river?—That is so.

28,715. It has been suggested that the conditions should be applied to them, which would prevent their doing that and compel them to refrain from taking water when the river is flowing at less than a certain quantity?—We have not said that. We are quite content to leave that 130 million gallons a day; but anything beyond that we want to be done through storage, in the same way as the Staines Reservoir.

28,716. (*Chairman.*) I suppose you would not object to having even the 130 million gallons subjected to that condition?—As a rule we should not object to it, but as a rule the 130 million gallons works all right.

28,717. (*Sir John Dorington.*) Although it did reduce you to 42 million gallons a day?—On one occasion, but it was rather more than the 130 million gallons then.

28,718. (*Chairman.*) We must hope that Providence will not send us many years like 1898?—Yes.

28,719. I believe you have an objection that you wish to state to giving the Local Government Board any powers of relaxing the limit of the different companies' take from the Thames?—The Conservators feel very strongly on that point, because, of course, Parliament has settled the rules, it has settled the amount, and it has settled the way in which it is to be done, after the most careful investigation both in the House and before Committees, and if one of the Ministers has a right at a moment's notice to overthrow everything that Parliament has done, we do not know where we are. We strongly object to it.

28,720. Surely, Sir Frederick—but you know better than I do—it is done under a strong sense of responsibility?—Yes; but we have got our duty to fulfil for the navigation, and are we to have our acts put on one side for the sake of the water companies?

28,721. What do you say to the discretionary power of exemption being vested in the Conservancy—that would do just as well as far as I am concerned?—The point we should take would be like this: We should allow the water companies—I am perfectly candid—to take anything that was wanted in a time of drought that did not interfere with the navigation; that is what we should do.

28,722. The way that question of exemption has been put to us is this: An extraordinary year like 1898 requires a gigantic system of storage?—It does.

28,723. Instead of that storage, which would, in average years, be absolutely useless, your pumps lying idle, your reservoirs never drawn upon, the whole capital lying waste and inoperative, it would be better in a year of emergency to vest in some body the discretion of saying: "Very well, take more water from the Thames, let the barges go aground for three months if you please"?—It is not the upper river navigation we are thinking of, it is the lower river navigation.

28,724. I mean the lower river navigation?—That is a very serious thing.

28,725. That is the way it is put to us; it is better in a time of emergency in an exceptional period to have a little inconvenience below the last weir than to put down millions of money doing nothing for years and years in order to meet a year of drought like 1898, which will only come once in half a century?—You see we have got that at the present moment. We need not take any notice of them. We are not bound to go for an injunction, and we did not exercise our powers against the Southwark and Vauxhall for a great many years, until they refused to make any storage at all. We should not make any objection; we should never act in a stupid way.

28,726. No, no; I am quite sure of that?—We should always allow them to take it, unless we found that the navigation was actually interfered with.

28,727. Then, I repeat, would you see any objection to a system vesting the power of giving exemption, or to enlarge the limits of the power of drawing from the Thames, in the Thames Conservancy?—I should not mind that, because, of course, we use it now

in a common sense way. We should never take any steps if we could possibly help it.

28,728. That is, vest the power in the body which has the protection of the navigation in its custody?—That is what we want, and that is all.

28,729. The power of saying, "Well, you may draw a little more, if you like"?—All we want is to protect the navigation.

28,730. (*Major-General Scott.*) The demands for navigation would have to give way if there was an absolute scarcity in London, with its large population, and they were suffering from want of water?—We say this: the companies are bound to go somewhere else into their own districts to get some water, like the New River Company, for instance, if necessary. It is not for us to save them making storage reservoirs on purpose for the sake of that; they must take care of their own customers.

28,731. (*Chairman.*) Granted, for the average wants of their districts; this suggestion of a power of exemption is only intended for an extraordinary case like that of last year, which, as you know, is quite unprecedented?—I can honestly tell you that we should not interfere if the navigation was not injured, which is a very important thing in the port of London.

28,732. I have a difficulty in understanding this question of navigation. As far as I can understand it, the 200 million gallons a day over Teddington Weir does not enable a barge to go up at low tide?—I am not talking of above; it is the navigation below that we are thinking of.

28,733. I am thinking of below. Supposing 200 million gallons a day were coming over Teddington Weir, that would not float a barge up to Richmond Weir?—But you see there is the tide coming up, and the two meet.

28,734. When the tide is coming up you do not care two straws whether it is 200 million gallons or 100 million gallons a day that is coming over Teddington Weir?—Yes, we do, because of the amount of mud and things that are not carried away in consequence of 200 million gallons not going down every day.

28,735. For actual navigation purposes the 200 million gallons a day are not enough at low tide?—Not at low tide, but then even at high tide in certain places there has been a great difficulty. Take now Kew Bridge; there has been a great difficulty in getting under Kew Bridge. We want a certain amount of water coming down from the upper river to clear it out.

28,736. I quite understand the value of the scour?—That is the thing.

28,737. (*Sir John Dorington.*) For a month at a time it would not matter, would it—for a month at a time the scour is unimportant, is it not?—We found it to a certain extent important during the last summer.

28,738. (*Chairman.*) Is not the valuable scour that of the great floods?—Yes, partly.

(*Sir John Dorington.*) The evidence we have had is that 200 million gallons give a depth of about 7 inches at low tide.

(*Chairman.*) An extra 7 inches.

(*Witness.*) The river is very peculiar. The tide used to go up all the way to Teddington, but ever since the Richmond lock and weir have been built its effect is considerably reduced, the scour is not so great in the tide going up, and we find there is now a great outery rather lower down, they want to put another lock and weir just above Putney. If you go on with that system, you will destroy the scour more and more, and the result will be that we shall have to lock down all the way through London. We opposed that measure ourselves very strongly, but the House gave it against us, and the result is proving that it is not right for the navigation.

28,739. As I understand, when you speak of the navigation you mean the navigation of barges?—No, ships as well, everything—we take all the whole thing.

28,740. Even a barge draws 4 feet 6 inches?—They have made them to draw 6 feet now.

28,741. Whereas the 200 million gallons a day only gives you a depth of 2 feet 6 inches at the lowest tide?—Yes.

28,742. So that a barge cannot go up with your 200 million gallons?—No, it cannot go up at low tide.

28,743. It equally could not go up if there was only 100 million gallons—I mean the navigation is equally stopped in both cases?—During the low tide, but it is gradually silting up more, you know, the less scour there is—that is the point.

28,744. (*Mr. De Bock Porter.*) You are of opinion, are you not, that the 130 million gallons is the largest quantity that the companies ought to be allowed to take from the river when it is low?—Yes.

28,745. (*Sir John Dorington.*) On any day?—Yes.

28,746. (*Mr. Pember.*) Without storage, of course?—Without storage. Our principle is this—that if you would order the companies to give a storage for about 90 days, there is plenty of water in the Thames for London for a hundred years to come. There is no difficulty in having the water for London if they have the proper storage. If you would agree to it, we simply want to make them provide for the very dry season and then there would be no difficulty at all.

28,747. (*Mr. De Bock Porter.*) In no circumstances in any year when the river is running low ought they to be allowed to take more than 130 millions direct out of the river in one day?—When it is running less than 200 million gallons over Teddington Weir. Of course, as Lord Llandaff said, if there was an unprecedented drought, the Thames Conservancy are a body of common sense people and we never should think of stopping the take if we could possibly help it—never.

28,748. (*Chairman.*) Of course one must try and find the middle term as it were—up to what point is expenditure on storage legitimate and proper to be demanded, and when does it become unreasonable and excessive?—Yes, that is just the point.

28,749. (*Sir John Dorington.*) You do not object, in fact, to your river being reduced below 200 millions, provided only 130 millions is taken out on one day?—We should object to it if we could, but that is settled by Parliament, and we cannot help ourselves.

28,750. That is what I rather wanted to have?—We object to its ever being under 200 millions, but the Act of Parliament has said, you are to have certain rights, and we do not want to interfere with them at all.

(*Chairman.*) It is for us a little to consider whether those rights may not be modified.

28,751. (*Sir John Dorington.*) You would rather press that—that although the existing right is 130 millions, notwithstanding that that would reduce the amount below 200 millions, that may still be taken without your objecting?—We should not like to interfere with vested rights at all.

28,752. I am asking you now, as a Conservator of the Thames, not what you think would be right, but looking purely at the question of the Thames, whether you would desire that the river should never be drawn below 200 million gallons, notwithstanding the existing right to draw 130 million gallons from the river?—We work very well with the water companies upon that basis, and I am quite satisfied to continue it.

28,753. You do not want to disturb the existing arrangement?—No.

28,754. (*Mr. De Bock Porter.*) But you would rather have the 130 million gallons reduced than exceeded to any extent whatever?—Yes, certainly.

28,755. (*Chairman.*) I certainly have always understood that our predecessors—Lord Balfour's Commission recommended that the 130 million gallons should be put under the same conditions of storage as any further supply that might be granted?—It has not been done, though.

28,756. I know it has not; nothing has been done in consequence of the Balfour Commission, and nothing will be done in consequence of ours?—I do not know. They are looking forward a great deal to your report. All the Bills are held over in the House in the hopes that your report will be out before they are brought on.

28,757. I do not know whether there is anything else you wish to say to us?—No. I think you have very kindly let me say the few words that I wanted.

(*Chairman to Mr. Freeman.*) Have you any question to ask?

(*Mr. Freeman.*) No, my Lord.

28,758. (*Mr. H. W. Cripps.*) We have heard here the amount of money that under the Act of Parliament was to be allowed to your directors; it comes to a small sum, of course, to each?—Very small.

28,759. Is that looked to as any great point, do you find, with the men you have who are now selected as directors?—The money is a very great point, because we could not carry on the upper river if it was not for the money we get from the water companies. The amount we receive from the water companies is too small, a good deal, even to carry on this year. We are not able to do any dredging in the upper river whatever, except just by Windsor, because the amount we have got is not large enough.

28,760. That is not what I was alluding to; I was alluding simply to the payments to your directors?—They are nothing.

28,761. You have got a very good set of directors and are satisfied with them, are you not?—Yes, and they receive only nominal pay—80*l.* a year, or something of that sort.

28,762. It comes to hardly 100*l.* a year?—It is not 100*l.* a year; nor anything like it.

28,763. That being a small pay does not prevent your finding plenty of people who are perfectly qualified and ready to come upon the direction?—There are very high-class men on the board altogether. It includes representatives of the Board of Trade, the Admiralty, the various county councils and the shipowners. We have a very high class of men, indeed, who are very intelligent, and who would have no hesitation in giving up the whole of their time for the good of the cause and the good of what they have got to do.

28,764. Supposing any new body was selected, do you think there would be any difficulty in getting a body who are willing to act without any very large salary which would make it of any importance to them?—A new body has just been fixed by Parliament, or at least, in 1894. It is a very representative body, and I do not think you can improve it by any means. It is as good a representative body as you can find; every part of the river and every part of the trade and everything else is represented.

(*Mr. H. W. Cripps.*) I am quite aware of it, being a dweller on the Thames myself.

28,765. (*Mr. De Bock Porter.*) It is your opinion that your Conservancy has sufficient funds at its disposal to defray the cost of efficient supervision of the effluents which run into the river?—Do you mean as regards purification?

28,766. As regards purification?—We asked for 12,500*l.*, but the Committee only gave us 7,500*l.* I should be satisfied myself with the amount used for purification, but what we do want is more money for dredging. If we could have the channels deeper there would be more water in the river, and there would be less difficulty at all times of the floods running off. If we could only get more money for the dredging, it would be of the greatest advantage to the river.

28,767. (*Sir John Dorington.*) You have dredged up to St. John's Lock?—We have dredged all the way from St. John's Lock, as you know, up to your canal, so that there is 4 feet of water always. But the barges now can go all the way from the Thames right away to Sharpness Point at Gloucester.

28,768. But the channel is not wide enough, according to your view?—I do not say that it is—part is quite sufficient, but round by Maidenhead and Cookham and Wallingford, and all those parts, there is a channel that wants deepening considerably, if we had got the money to do it. Your part is quite done—perfectly.

28,769. (*Mr. H. W. Cripps.*) Your barges do not go through to the Severn now, do they?—I do not know whether they have opened it.

(*Sir John Dorington.*) Yes, within the last month it is opened.

(*Mr. H. W. Cripps.*) Can they get through the tunnel?

(*Sir John Dorington.*) Yes.

(*Witness.*) That part is not within our jurisdiction. We have done our part.

(*Mr. H. W. Cripps.*) I know you have.

(*Witness.*) We had an arrangement with the Thames Drainage Commission.

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(Mr. H. W. Cripps.) I think you will find that a barge from the lower part of the Thames cannot go through the tunnel.

(Witness.) Sir John will know that.

(Sir John Dorington.) I believe nothing has stopped it except the recent floods.

28,770. (Mr. De Bock Porter.) Do you think the charges for inspection are likely to increase in the future?—Our inspection charges?

28,771. The inspection of the drainage that runs into the river?—No, I do not think it will increase; we are keeping it well in hand, and I think we shall carry it on satisfactorily with the present price, myself. The only thing that might increase that would be if there were any legal proceedings, but otherwise we are keeping it as well in hand as we possibly can.

28,772. (Chairman.) Have you not been met lately with a good deal of opposition from the local farmers?—No. Lord Valentia brought one body down to meet us, and the amusing part of it was that he represented Oxford, and that body complained most of Oxford.

28,773. I understood Buckinghamshire was rising up in arms?—No, Buckinghamshire is satisfied.

(Mr. H. W. Cripps.) I think Buckinghamshire is quite satisfied, because I represent them.

(Witness.) We try to make as little friction as we can.

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Sir EDWARD FRANKLAND, K.C.B., F.R.S., recalled and further examined.

28,775. (Chairman.) I think we nearly completed your evidence when you were before us on the previous occasion?—Yes. In order to complete the former part of my evidence, I promised to place before the Commission a diagram which I have now with me. I stated that when the raw water of the Thames contained a large number of microbes, the filtered water, as a rule, also contained a larger number than usual. I had no data with me at the time, and I gave that evidence a good deal upon the recollection of my results. But I have now drawn out this diagram, which, I think, very clearly shows that I was quite justified in making that statement. (The Witness handed in Diagram A. See "Maps, Plans and Diagrams.") In that diagram the number of microbes in the raw river water is represented by a black curve, and the number of microbes in the filtered water by a red curve; but, in order to make the curves perceptibly comparable, I have widened the scale of the microbes in the filtered water 10 times; that is, the number of microbes in the filtered water is multiplied by 10 in that column of figures. That enables the eye much more readily to follow and compare the two curves, and to see the increase of microbes in the filtered water, when the microbes in the raw water are high in number.

28,776. (Sir John Dorington.) The red line and the black line, then, are not both to the same scale?—No; the red line is 10 times the scale of the black line.

28,777. (Chairman.) Let me, first, understand what this diagram shows?—It shows the dependence of the number of microbes in the filtered water of the five Thames companies upon the number of microbes in the raw water that they are dealing with.

28,778. Which five companies have you dealt with?—The Chelsea, the West Middlesex, the Grand Junction, the Southwark, and the Lambeth—the five companies that take their water exclusively from the Thames.

28,779. Where did you get your samples of filtered water from?—From the filter wells of the five different companies, as the water issued from the filter beds.

28,780. How many samples were taken to lead to this diagram?—A very large number. The diagram extends, as your Lordship will see, over seven years; and each company's water was examined at least once a month; that is, there is a minimum of five samples examined in each month of the filtered water, and one sample of the raw water.

28,781. (Sir John Dorington.) Five samples of each company?—No; one of each of the five companies—sometimes two, but usually one.

28,782. (Chairman.) I see there is a correspondence—there is a rise in the number of microbes in filtered water corresponding with the rise in the number of microbes in the raw water?—Yes.

(Chairman.) I am quite sure of that.

(Witness.) Any body that is moving we give the option of doing anything they like that stops any impurity. They can take their own system and do anything, and if they will try to move we give them any time and any help we can. We do not want to be hard on them. The river is one-third better than it was four years ago, and that affects 500,000 people on the banks.

28,774. (Chairman.) When are we to have salmon in the Thames?—We have got smelts up to beyond Blackwall, and we hear they are going to try to put salmon trout in at Sunbury this year—that is, the angling societies are.

The witness withdrew.

28,774a. (Mr. Littler.) There is one thing—I do not think it is necessary to call Mr. Dickson back upon it—but he is very anxious to ask your Lordship's leave to say, with regard to a statement that was made about the Cray River head having been depleted and entirely dried up, that it is now flowing exactly as ever it did, so that it was simply and clearly due to the drought. If your Lordship desires to have Mr. Dickson brought back he is here, but I have simply acted as his mouth-piece; that is the fact, at the present time. Your Lordship will remember there was evidence given with regard to that at Question 12,744, where Mr. Waring said the River Cray has not one-fourth or one-fifth of the water that ought to be there.

28,783. But the rise is by no means uniform or equal. For instance, in January 1894 there is an immense rise in the number of microbes in the raw water and only a slight rise, even multiplied by ten, in the other?—Yes, that is so.

28,784. Whereas in February 1895 or March 1895, for a less rise in the number of microbes in the raw water there is a larger rise in the number of microbes in the unfiltered water?—Yes.

28,785. Very much larger, I think?—Yes.

28,786. (Mr. Pember.) And it is the other way again at the end of the year, apparently?—Yes. There are one or two anomalies where the curves go in opposite directions, but they are very few.

28,787. (Chairman.) To go on with 1895, the number of microbes in the raw water goes on increasing into March, whereas in the filtered water the highest point is in February, and then it immediately falls in March?—Yes, that is so. These anomalies are capable of a tolerably satisfactory explanation. The different companies have different amounts of storage, and if you can imagine a sudden flood affecting some of these companies, but not those that have a large amount of storage, that obviously would affect very much the comparison of the red curve with the black curve, because the companies having considerable storage would have been able to allow that flood water to pass by. I ought to say, perhaps, that the samples of river water and of filtered water were taken on the same day; but possibly the storage reservoirs of some of these companies might have been filled a day or two or three or four days before the flood came, and they would then be using, for filtration, water containing a lower number of microbes.

28,788. Let us pass on to October 1896. Early in October 1896, the microbes in the raw water attain a high point, then they fall abruptly to a very low point in November?—Yes.

28,789. On the other hand, the microbes in the filtered water shoot up in December?—Yes, they both shoot up in December very considerably. The top part of the diagram illustrates the number of microbes in the raw water, which is 160,000 in 20 drops.

28,790. Will you allow me to ask you how you can contrive to count 160,000 microbes in 20 drops of water?—Yes, that requires a little explanation. First of all, it is possible to divide a drop by suitable physical means into at least 100 parts, then when it is so divided, one of those parts is cultivated upon a plate of gelatine about 4 inches in diameter, and this will become thickly populated with colonies of microbes. This dish, or this plate, is then put upon a sheet of glass, ruled into square centimetres, and the colonies upon a certain number of these square centimetres are counted; there may be 100 or so in each of them, and that is

multiplied by the entire area of the plate in order to get at the average number of microbes, when there is such a large number as that.

28,791. (*Chairman.*) Are these microbes immovable or do they wriggle about?—That is the advantage of the Koch method of cultivation. Each microbe is perfectly isolated to begin with in the solid gelatine. It then, within three or four days, produces perhaps as many more microbes as there are people living in London. That forms what we call a colony, but it has been derived from a single microbe.

28,792. When does your counting take place—before the colonization or after?—After the colonization, because each colony is itself a distinct spot upon the gelatine plate. That is the advantage of this Koch method of cultivation above every other mode of testing biologically.

28,793. What is in the water originally; is not the number that you ultimately ascertain, but only the potential germs of that number, the founders of the colonies as it were?—Yes; it is the number of founders of the colonies that make this diagram, I ought to say. Each single microbe founds a colony, and a single microbe would scarcely have been discovered by a very good microscopist in the water—it would hardly be possible for him to discover it—but when it is multiplied by thousands or millions it is visible even to the naked eye.

28,794. (*Mr. Pember.*) You mean 160,000 colonies?—160,000 colonies are counted, but they are derived from 160,000 separate microbes.

28,795. (*Chairman.*) Let us take this December, 1896. In December, 1896, your diagram shows 155,000 microbes per cubic centimetre; does that mean 155,000 colonies or 155,000 separate microbes?—It means both; they were separate microbes to begin with, but when they were counted each microbe had become a colony.

(*Mr. Pember.*) He counts the colonies because he can only see the colonies.

(*Witness.*) It is only possible to see the colonies.

28,796. (*Sir John Dorington.*) You are not counting the individuals in the colonies; you are only counting the colonies?—It is quite impossible to count the individuals.

28,797. (*Chairman.*) Then, again, I ask you how it is possible to count 155,000 colonies in a cubic centimetre of water?—First of all, the cubic centimetre of water contains about 20 drops, and each drop we can divide pretty easily into 50 even or 100 distinct parts; we take only one of these parts for cultivation upon a plate, which has an area of 64 square centimetres, and we can count by very good eyesight and with a magnifying glass, upon several of these squares, all the colonies, and multiplying the average per square centimetre by the number of squares on the plate, we get at the total number of microbes in that hundredth part of a drop, which is about the twentieth part of a cubic centimetre. From that we calculate back how many there would be in the cubic centimetre of water. Usually we take the whole cubic centimetre for the experiment. In filtered waters invariably, a whole cubic centimetre is taken for cultivation, and the entire number of microbes is counted.

28,798. Your diagram does not show at all, does it, whether these cases in which the number of microbes in the raw water are larger than the average, are cases of flood water, or what state the river was in at that time?—I could have brought another diagram for that, but your Lordship will find it in my last annual summary of the Registrar General on the London water supply. There is in that summary a similar diagram, showing the close connexion between the number of microbes and the volume of water flowing in the Thames. The number of microbes is a function of the volume of water flowing in the Thames. That is much more clearly made out there than in this diagram.

(*Major-General Scott.*) That is the diagram, my Lord, if you want to see it. (*Handing a copy of the witness's summary to the noble Lord.*)

28,799. (*Mr. Pember.*) These microbes are not necessarily pathogenic microbes, are they?—No.

28,800. (*Chairman.*) I can always understand language, but diagrams, I confess, a little puzzle me. Do you mean that the microbes increase with the flood?—Yes, precisely.

28,801. We have heard the contrary from high scientific authorities—however, that is your opinion?—Yes; I have tested that for several years by diagrams of that kind.

28,802. We have also heard from high scientific authorities that the condition of the filtered water does not depend upon the condition of the raw water that is put upon the filters, but upon the excellence of the method of filtration?—Yes.

28,803. If you filter properly, it does not much matter how many microbes you have got in the raw water—it will come out equally good?—That was Professor Dewar's opinion, but it does not agree with my experience, and that is why I made out this diagram to test my experience.

28,804. Then what are we poor ignorant people to do when two such authorities disagree?—I think Professor Dewar's opinion probably was founded upon a diagram which did not so clearly illustrate his point as this does, because there was no multiplication of the number of microbes in the filtered water as compared with the number in the raw water.

28,805. No multiplication, what do you mean?—The difference between 10 microbes in a cubic centimetre and 100, which is the extreme limit we like to allow in a potable water, is so slight that you can hardly see it in a diagram upon the scale which Sir William Crookes exhibited in the course of his examination.

28,806. (*Major-General Scott.*) I rather think that Professor Dewar pointed out that when there was a large number of microbes the water was generally more or less turbid because the number increased on occasions of flood?—It was in reference to the raw water?

28,807. The raw water was more or less turbid?—Yes.

28,808. And when filtration took place the film on the filter was more protective in the flood condition of the water than in other cases?—Yes; our information about the action of sand-filters in removing microbes is still in a very rudimentary state, I ought to say. That is only one view of the action of a filter—that it acts mechanically in stopping the microbes. It is much more likely, I think, that the action is that of the somewhat higher organisms which prey upon the microbes and prevent their getting through the filters, because spring water, for instance, however many microbes it may have in it, is not ameliorated at all by filtration through sand; on the contrary the microbes increase in filtration through the sand instead of being diminished. But, of course, it may be said in this case that there is not the degree of turbidity in spring water that there is in river water. Altogether, that is a point I am afraid that even this Commission will not quite settle, as to the *modus operandi* of a filter.

28,809. (*Chairman.*) My goodness. We have not got to settle any of these points; the only practical question for us is whether it is safe to take flood water into the reservoirs of the companies—that is the only point of interest to us in practice?—Yes. But that again would have involved another diagram. I can, however, explain it in a few words. There is no doubt whatever that every day of storage of flood water diminishes very much indeed the number of microbes in that water; and therefore it is quite within the bounds of possibility that one might take into a storage reservoir, where the water will be stored for say three or four months before use, the very top of flood water and yet get a very good potable water from it. I say that is a possibility, but it has not yet been proved. But there is no doubt whatever from the observations I have been making now for seven years that every day that water is stored in a reservoir it improves greatly in its microbial quality. That opinion is borne out also by the bacteriological examination of all lake waters. Lake waters contain very few bacteria and, although the streams which come down into the lakes often contain a good many, they immediately disappear when they get into the lake. A very notable instance is that of Lake Ontario into which the River Niagara falls. The sewage of Buffalo goes into the St. Lawrence above the Falls. The microbes survive that tremendous fall down the cataracts of Niagara; when you come to the mouth of the river as it enters the Lake of Ontario the water is charged with an enormous number of microbes. Within a mile or two of the entrance of the river into Lake Ontario the lake is nearly free from microbes—it contains only about 100 or 200 per cubic centimetre.

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28,810. Then I take it that in your judgment the safest treatment certainly for flood water, and, indeed, for any water, is to put it into a subsidence reservoir?—Certainly, in the case of river water.

28,811. And given sufficient subsidence reservoirs, you might take safely even top flood water?—Yes, I think that is quite a possibility, but certainly it is quite safe to state now that after the top of the flood water has gone by, then the remainder could be taken with perfect safety.

28,812. After four, five, or six days?—I should think two or three days after the maximum flood.

28,813. Another result I gather from your evidence, and from your differences with Professor Dewar, is that the whole of this subject is still in rather an inchoate state?—It is. I consider it requires a good deal of investigation before we can arrive at a satisfactory conclusion upon this action of filters.

28,814. Has anything been done to carry out the recommendations of Lord Balfour's Commission in paragraphs 176 and 177 of their report?—Yes. Improvements have been made, no doubt, in filtration, and filtration is much better understood now in its relation to bacteriology than it was in the time of Lord Balfour's Commission.

28,815. You see Lord Balfour's Commission abstained from laying down any regulations as regards filtration?—Yes.

28,816. But suggested that the regulations should be drawn up after competent inquiry. Has there been any competent inquiry and any attempt to frame a set of regulations?—I do not think the inquiries have yet proceeded far enough to warrant legislation upon them.

28,817. Or to warrant the laying down of regulations?—No.

28,818. Can you suggest any system by which the inquiry could be continued and the storage and filtration of Thames water could be safely carried on?—Yes. Some things, I think, have been established, namely, that it is possible, with efficient filtration, to keep the microbes below, or not exceeding 100 per cubic centimetre. It has also, I think, been pretty clearly ascertained that effective filtration is best secured by very fine sand upon the filter, especially at the surface, and that a very thin stratum, comparatively, of fine sand is very much more efficient in stopping microbes than a thick stratum of comparatively coarse sand. The size of the grains of the sand used by the London water companies varies very considerably. The West Middlesex Company uses a very fine sand, and their filtration is as a rule more perfect than that of any of the other Thames companies who use coarser sand.

28,819. It is a finer sieve, as it were?—Yes, I think, that up to the present time one would prescribe that the sand to be used on the surface should pass through a copper gauze sieve of 1,600 meshes to the square inch—that is the sand used by the West Middlesex Company—that the rate of filtration should not exceed $2\frac{1}{2}$ million gallons per acre per 24 hours, and that the number of microbes should not exceed 100 per cubic centimetre. But I should be sorry to say, dogmatically, that those numbers have been yet sufficiently investigated to warrant legislation upon them; but such rates might be laid down for the guidance of the companies' engineers perhaps.

28,820. (Major-General Scott.) As a matter of fact, a certain proportion of the analysis shows that the companies have not yet perfectly attained that standard of 100 microbes per cubic centimetre—in a certain number of instances the examination of the water shows that this number is exceeded?—Certainly. It is exceeded frequently in the middle of the winter, in the time of severe frost, and, curiously enough, in the middle of the summer. These are two points that require further investigation as to their cause. I do not think it is the freezing of the sand in the filter in the winter as has been suggested. It is difficult to account for the action in the middle of the summer. It acts like an epidemic upon the whole of the filters of the London companies. They all go wrong at the same time. If it was only one or two companies that sent out a water containing too high a number of microbes one would blame them for something going wrong with their filters, but they all happen to go wrong at the same time.

28,821. Then that being the case, such a test could not be applied and made a statutory obligation?—I think not, at the present moment.

28,822. It would be quite impracticable to do so?—They could not comply with it. There is something beyond their powers on these occasions of a severe frost in the winter, and in the summer the effect of the heat is something which is not understood, and which the companies cannot avoid. Therefore it would be unjust, I think, to fine them for not doing that which it is impossible for them to do.

28,823. They are under statutory obligation to filter the water effectually?—Yes.

28,824. But such a test as this, which fails for some unknown reason at times, could not be applied and made a statutory obligation at present?—I think not at present. That efficient filtration, which was prescribed by Parliament is faithfully carried out now by the companies; I have not, for a very long time, had any sample of water which was not perfectly clear to the eye, although it may have contained 200 or 300 microbes per cubic centimetre. You can have a water containing 2,000 or 3,000 or 10,000 microbes per cubic centimetre, and yet the water may appear perfectly clear to the eye.

28,825. The cultivation test takes a certain amount of time, does it not?—Yes, it does, two days at least.

28,826. How is a company which is passing water continuously into its mains to know what the condition of that water is, bacterially, at any moment that the water is passing—it cannot do so, can it?—I should say it could not do so in less than 36 hours after the sample has been taken.

28,827. Therefore, the water may be passing for 36 hours with an excessive number of microbes without a company knowing anything about it?—Yes, it might.

28,828. On the other hand, by the time that this test has been applied, and it has been discovered that the water contains an excessive number of bacteria, the water may have changed its character and become much better?—Yes, but if it could be demonstrated that the companies could always, by observing proper regulations, pass water never containing more than a hundred microbes in the cubic centimetre, then I do not think it would matter on what particular day they were passing water with more, because they ought to be fined then, for having passed it at all. As I have already said our knowledge is not sufficient to enable the companies at all times to comply with such a rule.

28,829. Then that would point to having regulations with regard to the area of the filters, the thickness of the sand and other matters, which would ensure that this bacterial standard should never be exceeded?—I do not think it would be advisable in any legislation, to prescribe how the filters should be constructed, and all that; but the result should be tested—the water should be tested—both bacteriologically and physically to see that they efficiently filter it.

28,830. (Chairman.) There is now, I believe, by statute, an examination periodically for bacteria, and you can ascertain how many bacteria there are in the filtered waters that the companies supply?—Yes, that we can do, but there is no legislation upon it. There is no law which would prevent a company from delivering water containing 20 thousand microbes per cubic centimetre, provided it is clear to the eye. It complies with the Act of Parliament then.

28,831. I suppose you and all the other bacteriologists, however much you may differ in matters of detail, would all combine to say before a magistrate this water is not sufficient in quality?—Yes, we might say so if we had examined it bacteriologically, but we could not say that it did not comply with the Act of Parliament—at least I could not say so certainly.

28,832. The Act of Parliament says it must be efficient—I forget the exact words?—It must be effectual filtration.

28,833. (Major-General Scott.) "Effectually filtered" are the words I think?—Yes. When that Act was passed nobody knew anything about bacteria, and therefore Parliament could never, in point of fact, have contemplated that there should be a certain number of bacteria only.

28,834. If a water contained 100,000 microbes in a cubic centimetre, you could not positively say that that water was unwholesome?—Certainly not.

28,835. (*Mr. H. W. Cripps.*) Are these creatures which multiply in this extraordinary way you told us mischievous at all, or do they do any harm in the water?—I have never yet during the seven years I have been making these observations been able to catch a mischievous microbe.

28,836. They may be nutritious for all you know then?—Yes.

28,837. Then why do you object to them, why do you say there ought not to be more than one hundred of them per cubic centimetre?—Because if there were pathogenic organisms amongst them, if you were supplying water containing one thousand microbes per cubic centimetre, you would have ten times the chance of catching the disease represented by this microbe that you would have if there were only one hundred of these microbes.

28,838. You have never found one?—I have never found one, nor has one been found in the Thames, I think, at the companies' intakes either, which is a very much stronger thing—before any treatment of the water there has not been found one.

28,839. You have had cases in which you have had 155,000 of them per cubic centimetre?—Yes.

28,840. Not one of those dangerous?—I did not examine all of the 155,000, but as I have said, I have never been able to find a dangerous one, or a suspicious one even.

28,841. Is not your experience large enough to lead you to suppose that there are no dangerous ones?—I think it is exceedingly likely, but it has not absolutely been proved.

28,842. I was seeking to get at something practically; there is at present a bacteriological examination?—Yes, there is.

28,843. So that you can ascertain the number of bacteria per cubic centimetre contained in the filtered water delivered by the companies?—Yes.

28,844. Do you think it would be useful to vest in some officer, or some person, power to control the mode of filtration adopted by the companies—to say you must put finer sand, or you must have a greater depth of sand, or would you leave the responsibility of that to the companies themselves?—I think I should be inclined to leave it to the responsibility of the companies themselves.

28,845. That is, you would limit the control to the testing of the result in the filtered water?—Yes, and leave it to the companies to take the best known means of getting that result.

(*Chairman.*) There again you differ from the preceding witnesses we have had.

28,846. (*Major-General Scott.*) Are they to decide what is the best known means of filtering?—Each company ought to decide for itself, after of course studying the matter. Their engineers ought to be sufficiently well acquainted with the methods of filtration to understand what is recommended either by an officer of the Local Government Board or by anybody else, and to adopt that plan and try it, at all events; but if what they should do were prescribed by Act of Parliament they would then be relieved from all responsibility.

28,847. (*Chairman.*) I was not putting an Act of Parliament to you; it was putting to you some officer clothed with the controlling power who should not content himself with analysing filtered water, but should go further and say to a company: Why do you not take fine sand like the West Middlesex; do it tomorrow, put fine sand like the West Middlesex in your filters?—I think such an officer might go as far as to prescribe the fineness of the sand, because I think the effect of that has been very clearly ascertained.

28,848. That is exactly what I was asking you. I am trying, if I can, to get at some definite recommendation in the region of control. Would it, do you think, be wise to vest in any controlling officer such a discretion as that—to be able to say to a company, you must alter your filter in this way; or would you leave the responsibility of doing that to the company, merely subjecting them to penalties if they do not supply a water after filtration free from bacteria?—That is what I should prefer to the other means.

28,849. You do not see your way to comply with what Lord Balfour recommended, namely, that there should be regulations framed, strictly enforced by the Water

Examiner, as to the area of filtering beds, the depth of sand, the frequency of renewal, the rate at which the water should be allowed to percolate, and so on?—Not by an absolute strict rule which cannot be altered. I think it would be very desirable that there should be such an officer, and that he should give advice to the engineers of the companies on this, and blame them, or perhaps even fine them, if they deliver a water which is not up to the standard in consequence of not taking his advice.

28,850. (*Sir John Dorington.*) Say you have got a water containing a great deal too many bacteria, but the company can have no knowledge of that until 36 hours after its delivery; would you fine them for doing that which they could not have any knowledge of doing?—Certainly, if I knew that a properly constructed filter would always, invariably, deliver water containing not more than 100 microbes per cubic centimetre.

28,851. (*Chairman.*) But do you know that?—As a rule it is so.

28,852. As a rule?—Sometimes there is not a single microbe in a cubic centimetre. I have had several cases where the filtration has been so efficient that there has not been a single microbe. If you were to say, if you have a single microbe you shall be fined 1*l.* a day for it, of course that would be absurd, because they cannot work up to that standard, and we do not yet know that they can work up to the standard of 100 microbes, although that standard has been adopted by Dr. Koch and myself.

28,853. (*Major-General Scott.*) What further work should be undertaken to find out what are the conditions of filtration which would enable them to work up to that standard; or, what further should be done to enable us to know what should be the kind of filters which would enable them to always secure that no water will be supplied with more than 100 microbes per cubic centimetre?—I think that such an experimental station as that which has been in operation now for many years by the State Board of Health in Massachusetts. We have derived a great deal of most important information from those experiments in Massachusetts. We have no such institution in this country.

28,854. (*Chairman.*) Tell us shortly what sort of State Board that is, what does it do, and what are its powers?—It has its experimental filters, not on a small scale but on a sufficiently large scale to show the effect of various sizes of sand, various thicknesses of that sand, and various modes of constructing and working the filters, the rate of filtration, varying from one million gallons in the 24 hours per acre to as much as five million gallons with a properly constructed filter. I think they have found that it is possible to filter water efficiently, bacterially, at the rate of no less than five million gallons per acre for 24 hours. The London companies do not exceed, I think, about two millions or two and a quarter millions per acre per 24 hours.

28,855. (*Major-General Scott.*) Then there should be an experimental station?—There should be an experimental station, in which filtration should be tested by this much more severe test than the parliamentary one, that is by the bacteriological test. There ought to be, as I have several times pointed out three bacteriological stations in connexion with these water companies, one at Hampton, which should examine all the filtered Thames water; one at the New River Company's station at Green Lanes, or about there, and one at Lea Bridge, on the East London Company's premises. They should be bacteriological laboratories. They have those laboratories in Germany in all the principal towns, I believe.

28,856. Should the bacteriologist take the samples and cultivate them on the spot?—Yes, the cultivations ought to be started immediately. It much increases the difficulty, having to transport the samples of water. You have to keep them at a freezing temperature from the moment they are collected to the moment you begin the cultivation, or else the microbes would increase in number. Most misleading results have been obtained by not adhering to this rule. Samples taken, for instance, from the mains in London, always exhibit a much greater number of microbes than the samples from the same company's water collected at the filters, because the microbes multiply on the road. They have to pass through about 8 or 9 miles of mains, and they multiply so rapidly that one will increase to 10 or even 100 in the course of three or four hours sometimes, in favourable circumstances.

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28,857. I suppose with a better condition of atmosphere there would be less risk of contamination of the plates?—Yes. It is not advisable to have these examinations done in London on that account. The air of London is so full of microbes that it is very difficult to perform the manipulations without getting some from the air on to the plates.

28,858. (*Sir John Dorington.*) Where do you carry on your work—At Reigate, on Reigate Hill.

28,859. Where does Professor Dewar carry on his?—In Kersington.

28,860. Those are the two stations now?—Yes.

28,861. Neither of them quite in the right place?—Certainly they are neither of them in the right place, because they ought to be, both of them, on the premises.

28,862. You are too far off?—Yes too far off.

28,863. (*Major-General Scott.*) In fact there are particular times, I suppose you would say, in working of a filter, when it is very desirable that a sample should be taken?—Yes. Samples should be taken, perhaps, more than once a day when the filters are giving bad results; in very severe frosts at all times, several samples ought to be taken daily.

28,864. And when the filters have been freshly taken into work it is desirable to take samples of the effluent on its first issuing from the filter?—Yes, that is the only place where they ought to be taken.

28,865. (*Chairman.*) As I understand the times of greatest danger are severe frosts and great heat?—Yes. In time of severe frost certainly, and in the summer also sometimes, because these lapses from the proper degree of purity generally take place in June or July when the water is at rather a high temperature.

28,866. (*Major-General Scott.*) Is it your opinion that the rate of filtration should be ascertained continuously by a properly constructed apparatus?—Yes, I think so. It is very desirable, and I believe it can be done; I think the engineer to the East London Company has already at work an apparatus of that kind.

28,867. Do you think it important that the rate of filtration should be automatically recorded so that there may be a record of the rate that has been applied to the filtration during every 24 hours, and so on?—Yes; I think that is very desirable, and it is also very desirable that there should be a service reservoir of sufficient capacity, so that the filters could be maintained at a uniform rate during the 24 hours.

28,868. Do you also think it desirable that every filter well should be detached, so that a separate sample should be taken?—Yes. I think that is also desirable, and it is the case in some of the companies' works, but not in all.

28,869. Then, there are various points in which influence might beneficially be exerted, to induce the companies to do certain things?—Certainly. I have always found them ready to adopt any suggestion I have made—even at great expense sometimes.

28,870. (*Chairman.*) I presume all these precautions that you have suggested to us, you would think equally applicable if the companies' undertakings were bought by some public body?—Certainly, it would not matter what body.

28,871. You would not let the public body and the bacteria romp away in freedom?—No, certainly not; they would equally require control.

28,872. (*Major-General Scott.*) I observe in your first recommendation, you state that you think it is desirable that each company should have at least 30 days' storage?—Yes, that is the minimum quantity; a very low minimum I think.

28,873. Is that with the object of avoiding the direct introduction of flood water on to the filters?—Yes, and also with the object of avoiding what one might call, the top of the floods.

28,874. I think, judging from your diagrams, one may come to the conclusion, that the condition of the river water is almost always reflected in the condition of the filtered water in a lower degree—but still it is reflected?—Yes, I think that may be said both as to the chemical quality, and as to the bacterial quality. The chemical quality is always less desirable in heavy floods and, as I have already stated, the bacterial quality is also frequently bad at such times.

28,875. I think in some of your reports, you have remarked that the result of taking water from a

storage reservoir and filtering it, has been less favourable, less good, than the result of taking water from the river direct?—Yes.

28,876. And you have assigned a reason for it?—Yes, but that is only in respect of chemical quality, not of bacterial quality. The river water sometimes contains less organic matter than that which is present in the stored water, because the stored water has been taken in at a time of flood, whereas the river has gone down, and is perhaps running then with a good deal of spring water in it, and water of a very high quality. That occurs sometimes, not very often, but two or three times a year.

28,877. Storage has little influence on the chemical quality, but a great deal of influence on the bacterial quality?—Yes, very little on the chemical, but a great deal on the bacterial quality.

28,878. I gather you think the matter is hardly ripe for additional control at present, but you rather point to additional investigation and inquiry?—Yes, that is exactly my opinion.

28,879. The tendency of your mind is to let control extend only to the ultimate result, and leave the companies responsible for how that result is to be obtained?—Yes, that I think, is the most desirable course to take.

28,880. How long do you think this experimental work will have to go on before some definite conclusion will be arrived at?—I think it might go on for a couple of years, at least. It has been going on for some five or six years in Massachusetts, but we should start from where they have left off.

28,881. Then, having arrived at certain conclusions with regard to the construction of filters, and the way in which they should be managed, how are you to bring those conclusions into operation?—Then I think you may legislate upon them when you have arrived at something certain, and ascertained what the companies really can do if they observe certain precautions, then I think the matter would be ripe for legislation.

28,882. Should the legislation simply adopt a standard and leave it to the companies to carry out whatever was indicated by the experiments, or should the legislation require that the conclusions arrived at by experiments should be put into practical effect?—I think if the conclusions were sufficiently definite and clearly ascertained they might be made the subject of legislation; but that has not been the practice of Parliament hitherto, for instance, in the case of the pollution of rivers, it is the final result,—the effluent which is turned into the river,—which is tested, and the manufacturer is only required to use the best known means, or what he considers to be the best known means, of arriving at that result.

28,883. (*Chairman.*) Acts of Parliament in the first place are rather troublesome to pass, and then when you have passed it, the next week you scientific gentlemen might find out something better than what has been put into the Act?—Yes, that is the difficulty.

28,884. Do you say the northern lakes are much better than any lake that can be made in Wales?—Yes. What I mean to say is that it must not be considered absolutely necessary to go to Wales for an additional supply of water for the Metropolis. There are other places, and notably the lakes of Cumberland and Westmoreland which, as was clearly proved by the Duke of Richmond's Commission, are at least equally good with the best Welsh waters; and the best Welsh waters have been, in my opinion, already appropriated by Birmingham and Liverpool; the chief sources of the Vyrnwy by Liverpool, and the best of the Mid-Wales water by Birmingham. The water from South Wales, so far as I know, is not equal in quality to that in the north. For instance, Bala Lake is an admirable water, excellent for all domestic and dietetic purposes. The lake districts of Cumberland and Westmoreland were very carefully examined chemically by the Duke of Richmond's Commission, the analysis of them being made by Dr. Odling and myself. We examined 18 samples of the Welsh water, and 25 samples of the Cumberland and Westmoreland water, and Messrs. Hemans and Hassard the engineers who propounded the scheme of supplying the metropolis from the lakes of Cumberland and Westmoreland, considered that they had proved that the quality of the water was better, the quantity to be obtained larger, and the cost somewhat less than the Welsh scheme of Mr. Bateman. That was their opinion, I do not say it

is mine; because I am not competent to form an opinion as to cost. What I wish to put before the Commission in the supplementary paper I sent in, was my opinion that it is not necessary to buy up a portion of Wales to supply the Metropolis in 50 or 100 years' time, on the supposition that there is no other place to go to. The lakes of Cumberland and Westmoreland have been very little appropriated as yet, Thirlmere only has been taken by Manchester, whilst Ulleswater and Haweswater, which were the basis of the scheme of Messrs. Hemans and Hassard, are still to be had, and probably will be for a long time. Ulleswater at the time I examined it was of such excellent quality that it was nearly equal to spring water—better even than the Thirlmere water which has been appropriated by Manchester.

28,885. You talk about 50 or 100 years; in your judgment are the existing supplies sufficient for 50 or 100 years?—For 50 I should think certainly.

28,886. The Thames you mean?—Yes. The Thames basin is, of all river basins in Great Britain, the best water bearing basin that we have. It supplies a larger quantity and of better quality—at all events it can be made of very first rate quality by efficient filtration; and so long as there is sufficient water in the Thames basin, I do not think London ought to go elsewhere for its future supply. But, supposing it to be necessary at some distant future date it must not be considered that Wales is the only place we have to go to, and that it is necessary therefore to appropriate at once a sufficient area to supply the deficiencies of the Metropolis. That is all I wanted to say in connexion with this point.

28,887. (*Major-General Scott.*) Have you ever had any doubt with regard to the physiological effect of Welsh water—that is peaty and soft water—on people accustomed to hard water?—Yes, not in regard to Welsh water, but to that supplied to Inverness from Loch Ness, which is a strongly peaty water. It was found that people who have been accustomed to non-peaty water, visiting Inverness, were frequently attacked by diarrhoea, and had to go away; the people who lived there regularly, got accustomed to it.

28,888. (*Sir John Dorington.*) Inverness is not supplied from Loch Ness, I think?—It was 20 years ago.

28,889. It is supplied from a loch that lies a little bit to the southward of it—I forget the name of it, but it lies up in the hills?—That is a recent improvement.

28,890. I believe so?—That has been a recent improvement; it was taken from the stream coming out of Loch Ness, about a mile or so above Inverness at the time of the Rivers Commission.

(*Sir John Dorington.*) It may be so but it is not my impression.

28,891. (*Chairman.*) What is the difference in distance between Cumberland and Westmoreland and Wales?—There is a difference, I believe, of about 70 or 80 miles.

28,892. Is it 70 or 80 miles more to Cumberland?—It is 70 or 80 miles more from Cumberland. The distance from Ulleswater as given by Messrs. Hemans and Hassard is 270 miles and the cost, those engineers estimated at 13½ millions, which included land compensation, easements, severance, and every other charge. Of course that is the estimate of the engineers who propounded the scheme.

Cross-examined by Mr. FREEMAN,

28,893. As regards that last matter which you mentioned as to the effect of the soft water being brought to a new place, I think you gave evidence in support of the Birmingham scheme, did you not?—Yes.

28,894. That was for going for a supply of water very much the same in character as the Welsh water, would it not be. It was Welsh water.

28,895. When I say the Welsh water, I mean very much the same in character as that Welsh water which is proposed to be taken by Sir Alexander Binnie in his evidence?—Yes, only I said just now, I thought the remaining Welsh water was hardly quite up to the standard.

28,896. Not quite equal to the Birmingham water?—Yes, and certainly not equal to the Liverpool water.

28,897. It is from the same drainage area, is it not?—Yes, it is from the drainage area of the Wye.

28,898. I think, when you were giving evidence in the Birmingham case, you did not anticipate any of these terrible consequences to the people of Birmingham?—I have not said anything terrible, I think—I have only mentioned diarrhoea at Inverness.

28,899. At the present time, are samples so brought to you that in any one day you get samples of all the supply which is being given to London by the companies?—I do not quite understand.

28,900. Do you so get samples from the various companies that you are able to make a test of the entire supply which is being given to London as a whole?—Yes. I send my own chief assistant to collect the samples; he always collects them. I do not get them from the companies.

28,901. Is your system such that you collect and analyse at the same time samples of all the companies taken in one day, showing what the total supply to London is?—Yes, in one or two days, certainly.

28,902. Very often two days?—Yes.

28,903. More often than not?—Yes, except in the middle of the summer. The day is not always long enough to finish the collection in one day.

28,904. You said that one of the recommendations that you would desire to see carried out would be that each company had a separate filter well for each filter?—Yes.

28,905. As a matter of fact, do any of the companies at the present time have a separate filter well for every filter?—Yes, several of them have, the Southwark and Vauxhall Company, for instance.

28,906. Does the Southwark and Vauxhall Company have one for each filter?—I think for each. I will not be quite sure whether it may be so in one or two cases, but I always collect several samples there and also at the New River and East London Companies' works.

28,907. I think, speaking from recollection of what the evidence of the Southwark and Vauxhall Company was, they have some proportion of one filter well to each pair of filters?—That I am not aware of. The Grand Junction also have separate filter wells.

28,908. There are several of the companies, at least four I think, which take a considerable number of filters into each filter well?—Yes.

28,909. Taking samples from those filter wells of the water brought from several filters, of course you cannot allocate it to any particular filter—that follows?—Yes.

28,910. Do you consider that is a satisfactory means of testing the water?—No. I have said that I consider it would be better that each filter should have a separate conduit, so that a bacteriological examination could be made of the produce of each filter separately.

28,911. Would you say that such a test made from such a filter well would enable you to really form an opinion of the water which was being sent through the actual mains?—Yes, I do.

28,912. Not necessarily?—Fairly so, but not necessarily; of course, one filter might be working very badly, and the others very well, and one might infer that all the filters were working badly from that.

28,913. But, on the other hand, if you took your samples direct from the filter well connected only with the badly working filter, you would allocate the evil at once, and find it to be much worse than if you had distributed it over one or two?—Quite so.

28,914. And the latter you have already said you do not consider a satisfactory method of doing it?—No, I think the other would be more satisfactory.

28,915. It is the fact, is it not, that filters pass through a certain period of comparative inefficiency, for instance, directly after they have been cleaned?—Yes.

28,916. They are not efficient for about 48 hours, are they?—From 24 to 48 hours they are not as efficient as they are afterwards. There are curious anomalies, however. I have sometimes had water from a newly started filter that has been very good, but as a rule, I should say that the filtered water ought not to be used before 24 hours.

28,917. After 24 to 48 hours they work at a normal rate, for about three weeks generally?—At least, I should think so.

28,918. Have you any means of taking tests from the filters when they are in an inefficient condition, say during that 24 hours?—I could do it.

Sir
E. Frankland,
K.C.B.,
F.R.S.,

6 Mar. '99

Sir
E Frank-
land,
K.C.B.,
F.R.S.

6 Mar. '99.

28,919. As a matter of fact, do you do it?—No, as a matter of practice, I do not. I mean I do not do it regularly, but I have done it sometimes.

28,920. (Mr. Pember.) May I ask one question with regard to that question of Mr. Freeman's? My learned friend talked of the filters being inefficient for 24 hours. Have you any cause to say during the last three or four years, that any improper water has been sent down for consumption in London by a water company?—No. On the contrary, I should say that no improper water has ever been sent down during that time—the last three or four years.

28,921. Is there any great difference of size between the pathogenic microbe and what you call the harmless microbe?—I do not know that there is.

28,922. (Chairman.) What do they differ in?—They differ in the excreta which they produce. It is not the microbes that do the mischief, but it is the chemical compounds which they excrete which poison people who take these microbes.

28,923. (Sir John Dorington.) How do you recognise the difference between one microbe and another, is it not by the form?—Partly by the form, and partly by the chemical tests applied to what they excrete, to the liquid in which they are living.

28,924. So that optical examination does not actually tell you whether you have got a pathogenic microbe, but you have got to apply a chemical test?—Not quite, certainly, at least I should be very sorry to be quite positive upon an optical examination about a pathogenic organism.

28,925. (Chairman.) Is not the bacillus coli one of the worst?—No, that is a perfectly harmless microbe; but your Lordship has hit upon one of the greatest difficulties in bacteriology. It is exceptionally difficult to distinguish between a bacillus coli and a typhoid bacillus, they are very nearly alike.

28,926. What is the name of the typhoid monster?—The bacillus typhi abdominalis.

28,927. It is extremely difficult you say to distinguish between them?—Yes, it is.

The witness withdrew.

[Adjourned to to-morrow at 12 o'clock.]

FIFTY-EIGHTH DAY.

Tuesday, March 7th, 1899.

Guildhall, Westminster, S.W.

PRESENT :

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

The Right Hon. JOHN WILLIAM MELLOR, Q.C., M.P.
SIR JOHN EDWARD DORINGTON, Bart., M.P.
ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
ROBERT LEWIS, Esq.

CECIL OWEN, Secretary.

Mr. Balfour Browne, Q.C. and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Water Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

MR. WILLIAM WHITAKER, F.R.S., called and examined.

Mr. W.
Whitaker,
F.R.S.

7 Mar. 99

28,928. (Chairman.) You are senior officer of the English staff of the Geological Survey, I understand?—I was till 2½ years ago, when I retired.

28,929. And a Fellow of the Royal Society and of the Geological Society?—Yes.

28,930. And an Associate of the Institution of Civil Engineers?—Yes.

28,931. You were a witness before Lord Balfour's Commission?—I was.

28,932. (Mr. Littler.) At the request of the Commission, were you not?—Partly, and partly for the London County Council.

28,933. (Chairman.) That Commission appointed you to make certain investigations, together with Mr. Topley and Mr. Easton?—In Kent chiefly—not only in Kent, but chiefly in Kent.

28,934. You, I believe, have given great attention to the water bearing strata in Kent?—Yes, for a great many years past.

28,935. And you have come to the conclusion that there is a very abundant supply of water there?—Yes.

28,936. And a sparse population for the most part?—Yes, away from the towns; on the Chalk especially there is a very sparse population.

28,937. Have you prepared tables as to what the percolation unit in the district of the Kent Company will supply?—Yes.

28,938. Let me first understand what you mean by a percolation unit?—I use it as a convenient term for calculating, so that we should know what each inch of rainfall percolating might yield in each basin. On the bare Chalk of course we have simply to multiply by the number of square miles, but when dealing with parts where the Chalk is covered by other beds, it is under different circumstances and a less quantity gets in. I treated such as of half area so as to get it all into one simple figure.

28,939. What is an inch of rainfall on the Chalk proper over a square mile?—Of course, the rainfall varies in places.

28,940. An inch is an inch, I suppose?—Yes. An inch of percolation would be 40,000 gallons a day each inch on a square mile.

28,941. I do not quite see how the per day comes in?—That is each inch of percolation on a square mile.

28,942. (*Major-General Scott.*) Do you mean that would be a supply of 40,000 gallons per day per year?—Yes.

28,943. (*Chairman.*) Then there must go on to be fresh units?—That is for one inch, and if there are ten inches of percolation that would give 400,000 gallons per day.

28,944. (*Mr. Mellor.*) Do you mean one inch of rainfall percolates one inch?—I mean one inch of water percolating into the Chalk.

28,945. How far, how deep?—Of course, we mean percolating to the water level wherever that is.

28,946. (*Chairman.*) What puzzles me is your saying 40,000 gallons per day—it must be 40,000 per year?—No.

28,947. How do you mean “a day”? Suppose an inch of rainfall—that percolates into the Chalk?—Yes.

28,948. You say for every square mile you will have 40,000 gallons?—A day.

28,949. What do you mean by “a day”?—Every day in the year.

28,950. (*Major-General Scott.*) It is such a quantity as produces that per day?—It produces at the rate of 40,000 gallons per day. Of course, for supply purposes we want to get it in gallons per day. If you want the total quantity of the inch percolation you must multiply the 40,000 by 365, that is all.

28,951. (*Chairman.*) Do you mean that an inch of rainfall falling upon the Chalk and percolating into the Chalk embodies in it 365 times 40,000 gallons?—Yes, that is the calculation. It is not my calculation; it is a well recognised one, and it is always taken.

28,952. On the other hand when the Chalk is covered with beds of other material what do you take as your percolation unit?—As a rule I have taken it at about half.

28,953. Half that?—Yes, I have halved it.

28,954. That is 20,000 gallons a day?—I have halved the area instead, as it happens, but it comes to the same thing.

28,955. Very well, we understand what you mean?—Of course, that is only a rough approximation.

28,956. How has it been ascertained that an inch of rainfall will produce 365 times 40,000 gallons?—An inch of rainfall over a square mile, of course, is a measurable quantity—measurable in cubic capacity—and it is then turned from cubic capacity into gallons.

28,957. Do you assume that the whole of it percolates?—No, I am not saying what does percolate—I do not say an inch of rainfall means an inch of percolation. You may have 10 inches a year of percolation, or 8 inches, or 6 inches, or anything.

28,958. (*Major-General Scott.*) What have you taken as the average rainfall in Kent for the whole year?—I have not gone into the question of the average rainfall; it varies so very largely in different districts.

28,959. But you have allowed for a certain amount of percolation?—Yes.

28,960. What fraction is that of the total rainfall?—I have not definitely allowed for any amount of percolation. I have put the figures in such a way that whether a third percolates, or half, or an eighth, you can easily tell what the amount available is; but I should certainly not allow in Kent less than about a third of the rainfall.

28,961. You have assumed a certain number of inches in your total of percolation?—Yes.

28,962. And, of course, that has a relation to the total amount of rainfall?—The total amount of rainfall varies from 24 or 25 inches, I believe, up to 30 or more. It depends altogether on the part where the observation is taken.

28,963. But the more rainfall the more percolation?—Yes, but it does not follow that the greatest percolation is at the spot where the greatest rainfall is.

28,964. Not at all?—The more rainfall at one spot the greater percolation does not always follow; it depends how the rain falls and the season in which it falls.

28,965. (*Mr. Mellor.*) What do you allow for evaporation?—I have not gone into that question specially.

28,966. Then I cannot quite see what this evidence comes to, if we do not know what the evaporation is, and if we do not know what the thickness of the Chalk is?—We know the thickness of the Chalk perfectly well.

28,967. Or how much the rainfall can percolate?—We can only estimate the amount of percolation.

28,968. Will you tell me what thickness of Chalk you have assumed?—In Kent.

28,969. Yes?—From nothing up to 640 feet in the west and more in the east—it must be nothing where it ends off, and it thickens as we get to the top. We know its thickness fairly at any given spot.

28,970. I wish you would give me an instance—I am really trying to understand it?—I will give you an instance of the thickness of the Chalk at Crossness, under the Tertiary beds—it is 646 feet—and at Chatham it is 680 feet.

28,971. 680 feet?—Yes, it is never less in Kent, as far as I know, than 645 feet, where you get the whole thickness from top to bottom; but, of course, you do not always get the whole thickness of the Chalk.

28,972. How deep do you consider that the rain percolates from day to day. Supposing you take a continuous rainfall for a week, do you think at the end of the week the water would have reached the water-bearing strata at the bottom of the Chalk?—That depends altogether on where the rain falls—whether it is on low ground, or whether it is on high ground—it must vary utterly and entirely according to position.

28,973. Take it on high ground?—Then it does not; it would take a great deal longer.

28,974. I want you to give me an instance?—On the high ground it would take a good deal longer probably.

28,975. How long do you think it would take, assuming a continuous rainfall for a week?—You cannot say; it is utterly impossible, no man can get underground to see.

28,976. I should think so?—You cannot possibly tell that. It varies according to the locality in infinite variation.

28,977. (*Major-General Scott.*) One justification for your assumption of a certain percolation must be the consideration of the total amount of rainfall which falls in the year; must it not?—Partly.

28,978. Therefore, you must take that into consideration?—Yes.

28,979. When you put down a certain amount of percolation, you must have in your mind what the total amount of rainfall in the year is?—Yes. I think you misunderstand; what I put first is from a certain amount, a very small amount, that is an inch—taking that as a unit—what an inch percolation will do. If you have 8 inches percolation in the year, you have only to multiply that by eight; if you have 10, you have only to multiply it by 10. The difficulty is to know exactly the amount of what does percolate—and we do not know.

28,980. (*Chairman.*) What proportion of the rainfall do you assume percolates?—I should say, roughly—and it is very roughly—that in Kent you may take about one-third.

28,981. A third?—Yes. Of course, more in some places, and less in others.

28,982. Then, if you have 3 inches of rainfall, 1 inch percolates?—Yes. Of course, one 3 inches of rainfall may send 2 inches in, and another 3 inches falling at another season of the year may hardly send in any—it may all evaporate, or get soaked up by vegetation. It depends entirely on the period of the year when it falls; for instance, the summer rain does not do much good as far as percolation is concerned.

28,983. Have we got any bit of firm ground on which we can put our feet; is there any proportion of rainfall that we can take safely as being the amount that percolates?—I should say in Kent, not confining one's self to any particular area, you can fairly take somewhere about a third.

28,984. We have got so far as this—a third of the rainfall percolates, and every inch of percolation represents 40,000 gallons a day?—Yes.

Mr. W. Whitaker, F.R.S.

7 Mar. '99

Mr. W.
Whitaker,
F.R.S.
7 Mar.' 99

28,985. What is your percolation unit, as you call it?—My percolation unit is what that 40,000 gallons a day will do in any given area. Of course, I want to get the area, and I have to multiply the 40,000 according to the number of square miles in the area.

28,986. Then your percolation unit is 40,000 gallons a day per square inch of percolation multiplied by the number of square miles in the district?—Yes, allowing only half the square miles where there is not very free access to the Chalk; there I reduce the area, instead of reducing the larger figure.

(Mr. Littler.) Your Lordship understands that Mr. Whitaker has gone into each separate area by itself so as to arrive at his total.

28,987. (Chairman.) Yes. We will get the totals please only; let us take the area of the Kent Company's district. What do you say is the total percolation unit in that district?—The total percolation unit seems somewhere about 4,900,000 gallons in the Kent district.

28,988. In the present district of the Kent Company?—Yes; I should say there is one difficulty there. At the eastern end of their district their boundary goes so very irregularly with regard to the watershed, that I simply have to halve the watershed, because it is impossible to tell how much of it is theirs, and how much is their neighbours.

28,989. Very well, it is only approximate then?—Yes.

28,990. That 4,900,000 gallons is per unit of percolation?—Yes.

28,991. Lord Balfour's Commission spoke of seven inches of percolation as a moderate average; what number of inches of percolation have you adopted?—In my tables it is calculated at seven inches, eight inches, or ten inches; I have given all three. My impression is that seven inches is too low for Kent. I will not say it is too low for some other Chalk districts, but in Kent I should not like to estimate under eight inches percolation.

28,992. We will take it on the seven inch basis, that gives you what?—The seven inch basis gives you pretty nearly 34½ million gallons; the eight inches over 39 million gallons, and the ten inches, of course, over 49 million gallons.

28,993. (Major-General Scott.) That would be on the assumption that the whole of the percolated rainfall was obtainable?—Yes, that is the result of percolation, not the result of pumping or the raising of water, or of springs.

28,994. Therefore, where you are considering the question of getting hold of the water by means of wells, you must make an enormous allowance for the water which passes on one side of your wells or under your wells?—You must make a fair allowance, of course, it depends on the works you undertake how much of it you get.

28,995. And even if you make a tunnel for a considerable length, say a mile or two, a large quantity of this water that you estimate, would pass over the tunnel or under the tunnel?—I think if a tunnel were made at a proper level you would draw the water into it. I think that very much would not pass over it.

28,996. Something would pass under it?—That, of course, depends on the depth of your tunnel. If you put your tunnel at a proper depth, you could do it at such a depth that you would leave no possible natural outfall for the water to go out by.

28,997. Assuming that you drove a tunnel parallel to the Thames at a proper distance, with wells sunk into the water-level, what depth would you advise?—If you drove a tunnel parallel to the Thames, a fair way off it—I do not mean close by it—and if you drove it at sea level, the water could not go up hill over that tunnel to the Thames, and you would stop all water on its way to the Thames, or practically all, for I do not say what might happen with some small channel or fissure.

28,998. Water would rise into the Thames up hill as it were, assuming it were under pressure?—Yes, but by your tunnel and pumping you relieve that pressure, and you give it an easy exit at once.

(Major-General Scott.) You do not know that, that is a question.

28,999. (Chairman.) Might not some of it run under your tunnel and under the Thames and so away into

Essex?—No, because the water from Essex is coming into the Thames in the same way and there is an opposing stream—that is what happens.

29,000. I thought there was a theory that the Chalk dipped right away under the Thames into Essex?—Yes, and it rises again.

29,001. There is another rise on the other side?—Yes. I do not think the mere dip alone of the beds is enough to account for the flow of water.

29,002. You have given us figures varying from 34½ million gallons a day to 49 million gallons a day odd, is that from the Chalk alone in the Kent district?—Yes that is from the chalk alone.

29,003. What is your percolation unit for the Greensand district?—The Lower Greensand is as a rule a much more permeable formation than the Chalk. I mean that water goes in more quickly, and therefore I should be inclined to allow a rather larger amount of percolation there. If you allow 7 inches in the Chalk you ought to allow 9 inches for the Greensand, if you allow 8 inches for the Chalk perhaps 10 inches for the Greensand—and I think that would be very moderate for that. Of course, the Greensand having a smaller area of outcrop, you would not get so much from it as from the Chalk—I think in the Kent area you would get about 9 million gallons.

29,004. (Mr. Mellor.) How does the Greensand lie with regard to the Chalk?—Below it and separated from it by a fairly thick mass of clay—the Gault—so that the two are totally independent.

29,005. That is just what I want to know, can you give me the thickness of the clay?—The thickness of the Gault varies from 10 to 200 feet or more in Kent.

29,006. As much as that?—There is plenty of it.

29,007. I suppose you find the Greensand full of water in places?—Yes, sometimes.

29,008. You would say that of all strata, the Greensand is the water bearing stratum would you not?—No. I would prefer the Chalk myself.

29,009. You do?—Yes it is a much safer and more steady supply as a rule.

29,010. The water will follow the Greensand in all directions, will it not, up and down, whereas it will not follow the Chalk in the same way?—Yes, very much the same way; there will be little local differences, but very much the same laws would govern them except that in the Chalk the water flows largely along planes of fissures, whereas in most parts of the Lower Greensand it would flow along the bedding or through the pores of the rock. That is the difference, but the practical result would be pretty much the same though it would be arrived at by a slightly different process.

29,011. (Chairman.) To sum up, adding these 9 millions in the Greensand to the quantity you have given us from the Chalk that would make a quantity varying from 43 to 59 million gallons a day?—Yes practically and roughly speaking.

29,012. Obtainable if you can catch it?—Yes.

29,013. With the difficulties that General Scott has pointed out?—Of course; and it is only fair to say that in the case of the Lower Greensand the difficulties are greater than in the case of the Chalk.

29,014. Now, taking Kent, outside the Company's district, what quantity of water do you find there. I will take that more briefly?—There is just a little piece in the Kent Company's district, that is the Plumstead part of their works, that are in a separate area. It is very difficult to tell how they get their water—I think there and at Deptford they are really getting it from the great sheet of Chalk under the London Basin, and do not depend wholly on the watershed in their immediate area. In all probability that would add to it, but we cannot tell for certain. There are things that occur there that make me think that sometimes more is pumped out of the Ravensbourne than should ever get into it, without allowing that it gets in at the sides from another area.

29,015. Can you give us the amount that is drawn now from Plumstead and Deptford?—Nine million gallons, I am told, from the two. There is very little from Plumstead, I take it, say eight millions from Deptford; Plumstead is outside.

29,016. Eight million gallons a day?—Yes, from Deptford. I am speaking of the day. Then in the

Ravensbourne area there are the Shortlands Works, which get two million gallons a day; and besides that there are the Croydon Works, the result of which is that sometimes folk are getting 11 million gallons a day out of the Ravensbourne area, which, according to my estimate, is more than gets into it.

29,017. (*Mr. Mellor.*) That is from the Chalk, as I understand?—From the Chalk wholly.

29,018. None of these wells are in the Greensand?—No.

29,019. (*Chairman.*) Are these quantities that you have just been giving us for Deptford, Plumstead, and Croydon included in your total of 60 million gallons, or are they over and above?—Yes, they are included.

29,020. Then why did we bother ourselves about them?—I beg your pardon.

29,021. (*Mr. Littler.*) Are those quantities included in your total?—Practically, except for Deptford presumably getting an extra supply from water which does not fall into the Ravensbourne. I think that it gets some of its supply outside the Ravensbourne, though it is in it—so much of course of that would be additional to the 60 millions. It is utterly indeterminable, and I cannot say how much there is, but I believe there is a large amount got in that way.

29,022. (*Chairman.*) Will you give us, shortly, the total amount of water that you think will be found outside the Kent Company's district in the rest of the county?—Do you mean in the whole of Kent?

29,023. Yes?—In the whole of Kent, I take it that the Chalk would yield about 150 million gallons a day outside the Kent Company's district—something over that—I am putting it in round figures instead of putting it in the odd ones.

The witness withdrew.

Mr. RICHARD HACK recalled and further examined.

29,033. (*Major-General Scott.*) You are increasing the capacity of your reservoirs at Molesey, I understand?—Yes.

29,034. Are you actually doing this?—We are now raising the banks of the existing reservoirs for a capacity of 50 million gallons.

29,035. How many days' supply of your present average daily supply will the reservoirs contain when that work is completed?—Fourteen days I put it at.

29,036. What will be the depth of water in the reservoirs?—Twenty-three feet will be the total depth.

29,037. When the banks are completed?—Yes.

29,038. What depth do you consider it is necessary to discard to prevent disturbance of mud and so on, when drawing the water off?—Four feet.

29,039. Do you think it is a fair allowance?—Yes, in our case.

29,040. When were your reservoirs last cleaned?—One was cleaned three years ago. We clean each of them periodically every eight years; we clean one every two years, and but for the extension of reservoirs work now in hand, one would have been cleaned in the autumn of 1898.

29,041. Do you mean that there is a deposit of two years' sediment?—No, of eight years; it takes eight years for each reservoir to require cleaning.

29,042. You mean that every reservoir is cleaned once in eight years?—Yes.

29,043. What is the amount of sediment that is found in a reservoir?—Of dried sediment, one inch.

29,044. And in the state it was in when it was actually taken out?—Dried, one inch.

29,045. It was dried when it was taken out, was it?—Yes. We really can take it out in no other form. We have to let it dry. It was thoroughly drained.

29,046. That is eight years' deposit?—Yes.

(*Mr. Mellor.*) That was solidified.

29,047. (*Major-General Scott.*) Yes. Do you think you would find a difference in the character of the water, supposing you drew it off within that depth of four feet, would there be a difference in the quality of the water from that which lies higher in the reservoir?—Yes, it would block our filters, I think.

29,024. (*Mr. Littler.*) Is the figure 158,700,000?—Yes, that is it, but I put it at 150 millions roughly.

29,025. (*Chairman.*) That includes both the Chalk and the Greensand outside the Kent Company's district?—Yes, that is including the Chalk and the Greensand.

29,026. (*Mr. Pember.*) It brings the Chalk and the Greensand up to 196,000?—That is with a larger percolation. I prefer to stand on the lower amount of percolation; it is safer.

29,027. (*Chairman.*) That is assuming eight inches of percolation?—That is assuming eight inches for the Chalk and 10 inches for the Greensand.

29,028. That brings you up to 150 millions?—Something over 150 millions.

(*Mr. Pember.*) 207 millions altogether.

29,029. (*Chairman.*) 150 millions and 60 millions would be 210 millions altogether?—Yes, roughly, thereabouts.

29,030. (*Mr. Mellor.*) Do I understand you to suggest that it is possible to get all that quantity of water?—No, I do not say it is possible to get all of it; I say it is possible to get a great deal of it.

29,031. How much, roughly speaking—I only want your opinion?—It is a very difficult thing to say. Underground water is such a very doubtful subject that it is very difficult to attempt to say, but a very large amount certainly can be got.

29,032. Could you get half of it, do you think?—Yes, I should think so—of course with extensive works. Nearly half of the 60 millions is got by the Kent Company already, and there are other supplies as well.

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29,048. There would be in suspension, as a matter of fact, such a quantity of sediment that it would be very difficult to treat on filters?—It would mean cleaning the filters more often.

29,049. It would not be economical, at any rate?—No, it would be precipitated on the surface of the filters, but there would be no real difficulty about it except more often cleaning.

29,050. I observe that you are in the habit of closing your intake at intervals?—That is so.

29,051. With what object do you do that?—To exclude flood water.

29,052. Why do you exclude flood water?—In the first place, to take it into the reservoirs means a greater amount of matter in suspension which has to be deposited, and in the next place it means more often cleaning. Again, the water becomes coloured by taking it in and filtration will not wholly take that colour out. If it can be avoided it is better in my opinion.

29,053. You find that if you do not close the intakes you get water which you cannot treat so satisfactorily as you can the water in the river when it is low?—Certainly, it is so.

29,054. You are not able to overcome the inferiority of the flood water if you merely treat it by filtration?—No, my opinion is that if you take flood water in you must have reservoirs to let it in the first place settle. It means one thing or the other—it means either more filtration or more reservoirs.

29,055. Even now do you find that flood water when treated by filtration or in any other way at your command shows that it has been flood water in the filtered result? What I mean is if you are treating flood water do you find in the result a trace of the fact that it has been flood water?—On the filters do you mean?

29,056. No, in the water delivered?—Only by colour.

29,057. Is that all?—That is all, and that is very slight indeed.

29,058. (*Mr. De Bock Porter.*) Do you think it is necessary that the reservoirs should be cleansed every eight years?—Not absolutely necessary—certainly not.

29,059. But it is your practice to do so?—It is our practice to do so. It is dealing with a large quantity of stuff. When you take an inch of stuff over eight

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acres, we get something like over a 1,000 yards to deal with, and we want a large area of ground to deposit it on. It is better to get it away in small quantities—at least that is my opinion about it.

29,060. And do you think it is necessary to leave as much as 4 feet in the reservoirs, and that it shall not be drawn below that point?—To draw lower than that, in our case, starts the matter in suspension which is largely liquid, and draws with the suction.

29,061. Then you consider a considerable allowance for bottom water necessary?—I do not think it is necessary in all cases. It largely depends upon the position of the outlet pipe, which might be under the bottom of the reservoirs if the reservoirs were kept clean, but it would be necessary to leave some water in, though not so much as 4 feet in all cases. We have a very powerful engine by which we draw the water from the reservoirs; the suction is laid into the reservoirs: and this engine will pump something like 15 millions. That is a great draught from a reservoir, and such a draught sets up a movement in the matter—it is partly sediment and partly water.

29,062. (Mr. Mellor.) Are the bottoms of your reservoirs paved?—No.

29,063. What does the bottom of the reservoir consist of?—Ballast—gravel.

29,064. Loose gravel?—Ballast, excavated to the required depth only. The bottom is not otherwise formed.

29,065. Only excavated?—Yes, but made watertight by puddle walls all round—into the natural puddle.

29,066. There is no puddle on the bottom?—No.

29,067. Do you dig out an inch of solidified matter?—We take it off the surface of the gravel.

29,068. I suppose every time you clean it you deepen the reservoir in that way?—Very slightly, indeed.

29,069. (Chairman.) How do you keep your water in the reservoir if you do not puddle the bottom? Why does it not escape?—We have puddle walls all round.

29,070. But what about the bottom?—These puddle walls all round go down to the clay.

29,071. How deep below the bottom of your reservoir is the clay?—12 feet.

29,072. So that you have got 12 feet of gravel into which the water in the reservoir can sink?—Approximately so.

29,073. (Mr. Mellor.) Do you ever wash that gravel, or change it, or do anything to it at all?—No.

29,074. (Chairman.) Your allowance of 4 feet for bottom water out of a total depth of 23 feet is very nearly one-fifth?—Yes, that is so so far as depth is concerned, but with regard to capacity, of the 19½ millions, the 4 feet would only equal one-eighth part, because the form of the reservoir is like a saucer, and the lower 4 feet would, taken at its mean depth, be but one-half the area of the upper portions.

29,075. (Major-General Scott.) In the case of your reservoir you constantly take in water of different quality, do you not—of course the river varies in quality?—Yes, that is so, and it is bound to do so.

29,076. You sometimes have to take in water that is to a certain extent turbid, have you not?—Yes.

29,077. You cannot help it?—We cannot help it.

29,078. That water has to settle down in the water that is in the reservoir, and it takes a considerable time to do that, does it not?—Yes.

29,079. I mean, the coarser particles would fall very rapidly, but the finer particles of clay, and so on, would take a very considerable time to get down the 30 feet, or whatever it was, in the reservoir?—It will not go down solid at all; it will remain in suspension, but thickened together—closed up.

29,080. It takes a considerable time to get down, does it not?—It will not do it in the water; it only becomes a solid mass when the water is drawn from it. Then it takes a considerable time to dry.

29,081. Really it never does actually settle in the water?—No, not in the water.

29,082. There is a certain quantity, a certain stratum which is a mixture of sediment and water, at the bottom of the reservoir?—Yes.

29,083. And it rises to a certain height from the bottom?—Yes.

29,084. At any rate, with every quantity of water you take in, you take that sediment in—do you pump it on to the surface?—I did not quite catch your question.

29,085. Do you take that water in on the surface of the water in your reservoir?—Yes.

29,086. That sediment has to travel down whatever depth of water there may be?—Yes.

29,087. And a succession of these periods of pumping goes on, does it not?—Yes.

29,088. I mean to say, every time you take in water that sediment has to fall?—Quite so.

29,089. So that, usually speaking, the bottom part of the reservoir would be in the worst condition?—That must be so.

29,090. (Mr. Mellor.) How are your puddle walls supported; are they supported by masonry, or brick-work, or what?—By neither; the trenches are excavations into the earth, and the puddle is put in to join up with the maiden clay; it is a trench made right through, and the clay filled in.

29,091. Is the reservoir dug out like a basin?—It is in part dug out and in part made up by banks.

29,092. Do your banks come above the surface of the surrounding ground; that is what I want to know?—Yes.

29,093. How much above the surface of the surrounding ground—I do not want an accurate figure, I only want an idea?—An average of 10 feet. The land is not all one level, but it is an average of about 10 feet.

29,094. (Mr. De Bock Porter.) When this addition is made that you spoke of just now with reference to the deepening of the reservoirs, how many days' supply will you have in your reservoirs?—Fourteen days.

29,095. Fourteen days when they are completed?—Yes.

29,096. (Major-General Scott.) Can you give us shortly a description of the construction of your filters; I mean the thickness of the material, and the order in which the material is placed?—Yes. You are asking me for the formation of the filtering medium?

29,097. Yes?—The bottom of the filters is concrete, and upon that concrete bottom is laid drain pipes, and above the drain pipes and between the drain pipes is laid large stores, forming a reservoir for water which will ultimately get into the pipes; above that again is a smaller medium, and so on until it gets to such a small size that it carries the sand—some Thames sand in most cases, and the Thames sand in other cases carries sea sand.

29,098. Do you have the coarser sand at the bottom, and the finer sea sand at the top?—That is so.

29,099. Are you placing sea sand on all your filters, or do you propose to place sea sand on all your filters?—Yes, we are at work on that now. In some cases I am screening the Thames sand to make it as fine as the sea sand.

29,100. What is the depth of the sand?—The total depth of the sand will average about 3 feet 3 inches.

29,101. What is the smallest depth to which you reduce it by taking the top layer off when cleaning the filter?—It would probably run down to 2 feet 9 inches. We take 6 inches off, as a rule, before we make it up.

29,102. Will you describe the method of charging your filter with water when you are about to bring it into use?—We charge the filter from underneath with filtered water.

29,103. You allow the water to enter into the gravel?—We reverse the order of things and make what is usually the outlet the inlet. We fill up the whole of the interstices in the filtering material until it overflows the surface and becomes at a level some inch above the inlets; then we open the inlets from the reservoirs at Molesey.

29,104. You obtain a layer of water on the surface of the filter by bringing it in at the bottom and allowing it to flow upwards?—That is my mode of working the filters.

29,105. Having obtained a layer of water on the top of the filter you then admit water from the reservoirs

at the top by the usual inlet so that it falls on a cushion?
—That is it.

29,106. And does not disturb the sand?—Yes.

29,107. Is that the object?—That is what it is done for.

29,108. (*Chairman.*) Is it filtered water that you let in first?—That is so.

29,109. (*Mr. Mellor.*) The water, as I understand, is filtered as it comes in?—No.

29,110. As it goes out?—As it goes out.

29,111. (*Major-General Scott.*) When you have arrived at that stage you have a body of water on the filter; what depth is the water?—Over 4 feet; call it 4 feet.

29,112. Then do you allow an interval before you actually filter the water for the subsidence?—Yes, I allow 12 hours for the operation of filling it up, and I allow 12 hours after it is filled up to allow for the consolidation of the sand, if it has been re-sanded. If the bed has been re-sanded, I never start a filter to work under 12 hours, so that the sand may be brought down solid, and rendered, as I think, more fit to filter the water.

29,113. Do you allow any interval for the formation of a skin on the sand?—No, that would be waiting too long; we should not get it in our case, it would take a long time to get a covering on the sand.

29,114. You know that it has been recommended that you should allow a certain interval for the formation of a skin or film, partly clay, partly vegetable matter on the surface of the sand?—Yes, that has been recommended, but I am afraid that is impracticable.

29,115. (*Chairman.*) Why impracticable; because you cannot afford to wait?—I think that the film would not form. The film can only form with the process of filtration. The amount of water that is put on and held on to allow the film to form would not be sufficient; it might all be precipitated and subside, and still the filter would be well open.

29,116. (*Mr. De Bock Porter.*) After the filter has been charged it is used continuously, I suppose?—Yes, that is so.

29,117. What is the usual duration of life of a filter till it has to be cleaned?—Nine weeks, as a rule, ours will go.

29,118. (*Chairman.*) And then you wash the sand?—Yes. Then the filter is skimmed and the sand washed and used again.

29,119. (*Major-General Scott.*) What is your maximum speed of filtration?—I endeavour to keep it under 4 inches per hour.

29,120. What is that in gallons per square foot per hour?—2·08 gallons.

29,121. Is that your maximum rate of filtration?—It is rarely exceeded. It sometimes happens that we are bound to have two filters off at one time, one for re-sanding and one for cleaning, then at those times it may exceed it but it never gets beyond 2½.

29,122. What is the longest time that your filter will last without clogging up?—I have had them run for 16 weeks.

29,123. What is the shortest time?—Another time I have had them run for 6 weeks only—5, 6 and 7 weeks.

29,124. Is that the shortest time that a filter has taken to become clogged?—I do not think I have had any filter go less than 5 weeks.

29,125. You have never had them run less than 5 weeks?—No.

29,126. That I suppose is due to the fact that you have got reservoirs of considerable size?—I expect that is so.

29,127. (*Mr. De Bock Porter.*) But during a good part of the year you have to let the water straight in on to the filters have you not, out of the river, and you do not take it all from your storage?—Never. All the water comes from our reservoirs from Molesey to Surbiton.

29,128. It is all stored before it is put on?—It is all stored and it is all circulated. If the water is very bad we circulate the water through. We have four reservoirs and the water is taken from the river and put into one of those reservoirs and it is circulated through the whole four of them before it is drawn out. I rarely know a time when the surface of the water on

the filters cannot be seen when covered by the water from Molesey—the cases are rare.

29,129. (*Major-General Scott.*) What is the largest amount of water that you have to pass in the day through your filters collectively?—I should put it at 14 millions.

29,130. It never goes to as much as 15 millions I suppose?—I think not, because in the case of the supply requiring that or larger quantities for a few hours, it would be got by reducing the level of the water in the Putney filtered water reservoirs.

29,131. What is the smallest rate of filtration that you allow to occur before you discard the filter for the purpose of cleaning it?—About one and a half gallons.

29,132. One and a half gallons per square foot per hour?—Yes. It would not do to let them run longer in my case.

29,133. Then considering that your filters are varying in rate of filtration from, as you say, 2·08 gallons per square foot per hour, to 1½ gallons per square foot per hour, the average rate must be something between those two?—Four of the filters would be doing the four inches—that is 2·08; one would be off, and that would leave three filters or three-sevenths doing sufficient to make up the average of one and a half.

29,134. Then you are never on any occasion, as far as your recollection goes, obliged to exceed 2½ gallons per square foot per hour?—I do not know of any case.

29,135. I suppose you have read in the Report of Lord Balfour's Commission those paragraphs that refer to filtration and the regulations required for filtration?—Yes.

29,136. What is your opinion on that recommendation; do you agree with it?—Yes, fairly, on the whole.

29,137. Do you agree that there should be regulations for filtration?—I should like to refresh my memory with those recommendations.

29,138. Do you agree that there should be regulations made by some superior authority which should enforce a certain manner of carrying out the work, and a certain manner of construction?—I think it is very well done as it is in our own hands. We take every care of the water, and I do not know whether it requires any other thing to be done.

29,139. You are aware, of course, that the companies have very variable methods as regards filtration—I mean the construction of the filters differs very considerably, does it not?—I believe it does.

29,140. And the amount of subsidence reservoirs differs considerably in each case?—That is so.

29,141. Of course, one company may excel in one point and another in another?—Exactly.

29,142. Do you consider that regulations should take the best points of every company, and level up the other companies to that degree of excellence—do you consider that regulations of that kind would be good?—I should not like to give an opinion on that subject. I should not like to base my opinion on the regulations so far as other authorities would like that form of regulations. I can only speak for my own company.

29,143. For your own company, do you consider such regulations would be a good thing or not?—I did not quite catch your question.

29,144. In the case of your own company, do you consider that such regulations as were recommended by Lord Balfour's Commission would be a good thing or not?—I do not think it is necessary.

29,145. You do not think it is necessary?—I do not.

29,146. Have you got a separate well for each filter?—No. We have one general well, I am not quite sure that I understand your question—is it with a view to taking samples?

29,147. Yes; have you got a separate well?—No, but the company have now instructed me to get that done, so that we can take samples from every filter.

29,148. You are now constructing wells for the purpose of enabling samples to be taken from each filter?—That is so.

29,149. It is at Surbiton, of course, where your filters are?—That is at Surbiton.

29,150. Did you hear Sir Edward Frankland's evidence yesterday?—I did not.

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29,151. Perhaps I might tell you that he expressed an opinion that it would be advantageous to have laboratories at certain of the works, and that bacteriologists should be engaged to take samples at those places and make the cultivations of the microbes at those places instead of having to take the samples away to a distance; what is your opinion on that subject?—That might be a very good thing, I dare say. I am told that in the conveyance of the samples to London, they sometimes take up microbes that are not taken from the filters. Perhaps in the interests of the companies it would be better if they were at once tested.

29,152. Do you think it would be an advantage to you to know, at an earlier period than you do now, what is the state of the water issuing from your filters?—I do not myself see that it would be a great advantage in the matter.

29,153. Would it be of advantage to you to be enabled to direct the attention of a bacteriologist to some particular filter and ask him to take a sample; if you had any doubts as to the condition of the filter, would that be of advantage?—If you will allow me not to answer your question directly, I think that if samples were taken independently, not out of the general well, but if they were taken from each filter, so that the analysis might point to the distinctive filter, that would be a great advantage; but taking it from the general well it gives us no means of knowing which filter is wrong.

29,154. Quite so, but that you are going to correct?—Yes, that we are about to construct.

29,155. Assuming that were corrected, would it be an advantage to you to be able to apply to some bacteriologist who should be at hand, and ask him to take a sample from some particular filter, and ascertain what was the character of the water going out bacterially?—Yes, there might be an advantage in that.

29,156. Are you able to conform continuously to the standard which has been adopted by Sir Edward Frankland of 100 microbes per cubic centimetre?—Yes, very nearly so, but I think we have exceeded it sometimes. The average of microbes for the 12 months ending the 31st December 1898 was 23·13.

29,157. (*Chairman.*) What was the highest?—234 has been the highest in our case.

29,158. (*Major-General Scott.*) On how many occasions did you exceed the 100?—Three times. I believe I am telling it you correctly.

29,159. (*Mr. Mellor.*) In the winter or the summer?—The excess of microbes is in the winter, generally.

29,160. (*Major-General Scott.*) Do you consider it would be practicable—that it could possibly work—if it were made a statutory obligation on the companies to maintain that standard of 100 microbes per cubic centimetre?—No, I do not think it would be possible. I think these things would always occur, no matter what precautions are taken. I think the microbes would be there at times. That is my opinion. I think you would get more than 100 at times.

29,161. Are you able, when these increases in the number of microbes occur, to ascribe it to any particular thing that has happened; can you account for it?—I think it is more often that the sample bottle has been broken, and air has got into it between taking it from the general well in which it has been dipped and getting it up to the place where it is sealed, which is, perhaps, a matter of 50 yards.

29,162. (*Mr. Mellor.*) That is rather careless?—It might happen in that way. Many times it is pointed out to me that the number of microbes is high—not above 100—and I cannot account for it in any way. I can assign no reason for it at all. If some precaution is omitted with reference to the sealing of the tube or glass, I am told that a great accretion of microbes will go on.

29,163. (*Major-General Scott.*) We have been told, by the gentlemen who attend to the testing of the water, the chemists, you know, that they telephone to you on occasion, and tell you immediately they find any excessive number of microbes, and that you proceed—speaking generally of the engineers—to correct the defect; from that one would infer that you do occasionally become aware of some reason for this increase?—It is made known to us, certainly, but it is rather difficult to find out what the reason is, or to locate it in any one filter, unless the sample is taken from the one filter.

29,164. Exactly, your difficulty at present is the fact that samples cannot be taken from individual wells, and that you are rather abroad when you get a report that the filtration is not quite satisfactory, because you cannot ascribe it to any particular filter?—That is quite so.

29,165. That could be remedied very soon, I suppose and, as you say, you are going to remedy it?—That will be remedied very quickly.

29,166. (*Chairman.*) But I understand you that when you are told a particular filter is producing too many microbes, you do not know what that is due to?—That is not exactly the case, as we pump one only from a general well.

29,167. Yes, you do that, but even if you had a sample from a particular filter, and you were told that filter was producing too many microbes, you would not know what that was due to?—No, but we should know where to go to work.

29,168. What would you do?—We would draw the water off.

29,169. And what then—wash your sand, or what?—Clean the sand.

29,170. Then that would seem to show that the excess of microbes is due to dirty sand?—No, I can scarcely allow that; but something must be done, we must look for some reason; it is a very difficult thing to say.

29,171. (*Major-General Scott.*) I suppose you might take such a step as to reduce the rate of filtration?—In our case I do not think we can go much lower. I think the rate of filtration at 4 inches is more than a reasonable rate; it is low.

29,172. Do you consider that it would be advantageous to have an arrangement made by which the rate of filtration could always be known?—I always know the rate of filtration in my filters.

29,173. How do you know it?—I know it by a standard gauge on the sand. All I have got to do is to take the water off and observe it for a couple of hours, and then I know the rate that it is going down. That is done constantly.

29,174. But then you stop the entry of water into the filter in order to do that?—That is so.

29,175. Would it not be convenient if you had an arrangement by which a mere glance at a dial, or something of that sort, would tell you continuously, without all this trouble, what the rate of filtration was?—I do not think so. I would rather depend upon my present method of the standard gauges on the sand than I would trust to any automatic arrangement; that can only be approximate in any case, and mine is positive.

29,176. You do not place much confidence in the apparatus, I suppose?—I do not. I think it is a difficult thing to fix them in the first place, and to arrange the rate.

29,177. Have you ever seen any at work?—I have not. I know of one, and I know that they use them at the New River.

29,178. Have you ever tried one?—I have not.

29,179. Do you think it would be an advantage, as was described by one of the engineers—I think Mr. Restler—to have an arrangement for an automatic record of the rate of filtration on a card or a sheet of paper?—Yes, it would do very well if it could be depended upon. I think still that the method I adopt is more positive. I would rather depend upon it.

29,180. But then, if you had such a sheet or card here, you would have a record and a proof of the working of the filter at all times to which you could refer, and to which other people could refer?—That is so.

29,181. (*Mr. Mellor.*) It would be like the register of a barometer, which you could put away and refer to?—Yes, that would be so; but I am doubtful about its accuracy.

29,182. (*Major-General Scott.*) Do you receive advice from the chemists as to the construction of filters, or as to the improvements which might be made in the construction of the filters; do they give you any advice about it?—None whatever that I am aware of.

29,183. They do not?—No.

29,184. Their supervision does not extend to applying the results of their tests to an examination in regard to what would be the best construction of the filters?—No. I think the chemists are satisfied that

we are doing the best, and that the results we are now obtaining are satisfactory—I really think that, speaking for the Chelsea Company.

29,185. Have not the companies, for the last two or three years, been gradually making improvements in the filters; for instance, you state that you are placing sea-sand on your filters?—That is so.

29,186. What led you to do that?—Probably that was due to a recommendation, I believe, of Sir Edward Frankland's.

29,187. (*Chairman.*) Then he did make a recommendation to you?—Yes.

29,188. (*Major-General Scott.*) In that case Sir Edward Frankland did apply his examinations of the water usefully in that way. I mean he came to the conclusion from the results of his examinations that fine sand would be an improvement, and he recommended you to put it on the filter?—I believe it was on the recommendation of Sir Edward Frankland that I had an order from my Board to use sea-sand some few years ago.

29,189. Do you consider that the habitual admission of flood water directly on to the filters would tend to lower the average quality of the water delivered?—No, I think not; but it would tend to increase the colour at times.

29,190. It would not tend to lower the quality otherwise than to increase the colour?—Only that, that I know of.

29,191. But that increase of colour, we have been told—I do not know whether you are aware of it—has generally been accompanied by an increase in the amount of organic elements—

29,192. (*Chairman.*) Vegetable elements?—Yes, I have heard that.

29,193. (*Major-General Scott.*) How soon, in practice, after a flood do you take the water into your reservoirs?—In our case, 9 days.

29,194. Never less?—Sometimes less; according to the state of the flood and the time it takes to run off.

29,195. What is the shortest that you have had?—The shortest is four or five days.

29,196. Have you found any inconvenience from that?—The water, you will understand, is as good after the four or five days as it would be after nine, because we have to watch the water, which we do by means of the colour test in the river, and it goes by the same colour. We never put any water into our reservoirs until we can see into the river 2 feet 6 inches—it does not matter whether it has stood four or five days or nine days, the matter in suspension is the same, as shown by the colouring matter in it.

Re-examined by Mr. RICKARDS.

29,197. You are doubling your storage capacity for filtered water at Putney Heath now, are you not?—That is so.

29,198. And your average supply in 1898 was 12,079,000 gallons a day?—Yes.

29,199. Your storage capacity when you have finished raising the banks of your Molesey reservoirs will be 189 millions, will it not?—190 millions.

29,200. That gives in actual storage capacity 15½ days' supply?—Taking the whole of the water out, yes.

29,201. (*Mr. Pember.*) May I ask this witness one or two questions that concern me? (*To the witness.*) You spoke of there being two antidotes, as it were, to the question of how often you would have to clean your reservoir—one would be letting the flood water settle before it came in?—Yes.

29,202. How long should you say that it ought to settle—you have just now mentioned four or five days, should you think that ample?

(*Chairman.*) Four or five days after the flood, he said, he took it in.

29,203. (*Mr. Pember.*) Yes, I beg your pardon. How long do you say it ought to settle before you should begin to take it into your filters?—I cannot quite understand the meaning of settling in a river.

29,204. In a reservoir—you say there are two ways in which you would make flood water amenable; one would be by letting it settle in the river, and the other would be by extra trouble in filtration?—Yes.

29,205. Supposing you adopted the remedy, so to speak, of allowing it to settle in a reservoir, how many days do you say it ought to settle before it was passed on to the filters?—Five or six days.

29,206. And that, in your judgment, would be enough?—Yes, I find it enough in our case by circulation.

29,207. In considering a large scheme like the Thames reservoir scheme, should you even think that a smaller number of days than five or six would do?—It would depend on the area of the reservoirs you have got.

29,208. You know that in our reservoirs we have about 3,600 millions, with a depth of 35 feet?—I should think to allow four or five days to pass with any flood is quite long enough.

29,209. There is another question I wanted to ask you about. You suggest that you leave about 4 feet out of your 23 as what we will call dirty water; up to this time you have had a comparatively small amount of storage or subsidence reservoirs?—Yes.

29,210. And, therefore, they are all of them filled and re-filled a great many times in the year?—Several times.

29,211. And that of course would make a great difference in the amount of deposit that they receive?—Yes, I may explain that. I put the whole of the water into one reservoir, the first reservoir, and I allow it to circulate round. Practically the whole of the sediment is in one reservoir. So it goes on for eight years.

29,212. Quite so, that is what I thought. You may take it, with ten acres, as one inch.

29,213. That is what I want to get at; when you say you have to allow 4 feet for dirty water in your reservoir, it is under very peculiar circumstances—it is the one reservoir that takes it from all the others, in fact?—It is the one reservoir that we are drawing from.

29,214. How often is that filled and refilled, do you suppose, in the course of the year?—Thirty-five to forty times.

29,215. Then of course it gets a great deal more silt into it than a reservoir, such as I have been asking you to consider?—Yes, on account of the small area.

29,216. On account of the small area and on account of the number of times that it is filled and refilled?—Yes.

29,217. So that it would be no criterion of the relative amount of silt which would subside in such reservoirs as the great Staines Reservoir Scheme which would only be filled once a year, and, perhaps, not even that?—No. I will put it in another way—if I were to put the water over the whole area of our reservoirs, instead of putting it into one, the inch would probably become less than half-an-inch.

29,218. And the 4 feet, 2 feet?—No.

29,219. They would not?—The 4 feet must remain; we cannot draw that down.

29,220. What you have to allow in your reservoir is no criterion of what we should have to allow in our great Staines Scheme?—Not at all.

29,221. (*Chairman.*) Do I understand that your inch of sediment is only an inch on the reservoir, so to speak?—That is so, and that is the one we take it from; we pump it into one reservoir.

29,222. (*Mr. Pember.*) There is just one other point I should like to ask you, if you would answer me, kindly. You spoke of the great size of your pumping engine, and you said that it would deliver 15 million gallons a day?—Yes.

29,223. Of course, that is on an enormous scale relative to the small size of your reservoirs?—That is so, and that is the reason I pointed it out. It creates a great draught.

29,224. As to the colour, of course, when you say that there would be a slightly heightened colour in the water, and that that would be the only drawback if you filtered a little faster, I suppose the colour is not what any of us who are not experts would notice in a tumbler of water?—No. I test my water in a 3-foot tube, and of course that is a crucial test. You would not notice any colour, as a rule, in a tumbler of our water at any time.

The witness withdrew.

Mr.
R. Hack.
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Mr. E.
Collins.

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Mr. ERNEST COLLINS recalled and further examined.

29,225. (*Chairman.*) We already know that you are distributing engineer to the New River Company. Have you prepared some tables showing the result of the use of the waste meter system by the New River Company?—Yes.

29,226. Do I understand that you have applied the waste meter system to the whole of your constant supply?—Not quite. The waste meter system is applied to 145,000 houses at present, and our constant supply is given to 151,000 houses.

29,227. At any rate, you have got 145,000 out of 151,000, and your total number of supplies is what?—The total number of supplies in the official return up to December 1898 is 165,534.

29,228. So that you have applied your waste meter system to a considerable proportion of your total supply?—Yes; 91 per cent. of the whole of our supply is now constant—

29,229. Yes; that we are not concerned about; besides your waste meter system, have you introduced a system of testing and stamping fittings?—Yes.

29,230. That, of course, is purely voluntary on the part of the public?—Purely voluntary; we have no powers to enforce its use.

29,231. Do you find that the public have accepted it and adopted it?—Yes, very greatly.

29,232. What percentage of the fittings in your district are stamped by yourselves?—Stamped fittings are used in 95 per cent. of the new houses that are laid on.

29,233. In the cases of the odd 5 per cent., are they because the builder will not submit to your tests, or what?—I do not think so; generally speaking, if they are not stamped they are up to our sample. There are a few people who do not fall in with it, but they generally use the same quality, although not with the stamp upon it.

29,234. That would seem to show that there was not much use in the stamp?—It is only in the 5 per cent.

29,235. If the 5 per cent. are as good as the 95 per cent.—?—They are not, perhaps, as good. They have not got our guarantee upon them that they are as good.

29,236. But your guarantee will not stop the waste of water?—It will in a great measure, because before we guarantee these fittings, we test them very carefully.

29,237. In the case of the 5 per cent. they are not so good as the 95 per cent.?—No, they are not so good, although they are better than the ordinary run of fittings.

29,238. Do you conceive that that means of obtaining efficient fittings is valuable?—Most valuable. I attribute our success in the suppression of waste to the utilisation of properly tested fittings of sound and good manufacture.

29,239. In your judgment should that be made compulsory?—Yes, certainly it should.

29,240. People should be obliged to submit their fittings to your test?—Yes.

29,241. The best fittings will not prevent negligence, will they?—No, they will not, you cannot prevent that by the very best fittings.

29,242. I suppose you would like some provision against negligent waste?—Yes. I think we ought to have that.

29,243. Taking those two things together, that is, the improved fittings and the means of discovery that you get by your waste meter system, have you reduced the rate of supply per head?—Yes, very considerably.

29,244. Your tables, I believe, apply to separate districts?—Yes.

29,245. Have you not got a table that would apply to the whole of the districts that are under waste meter inspection?—I could, of course, have prepared it for the whole of the districts, but I thought it was more instructive to give you parts which would point out to you the peculiarities of it. One table, which I will hand in, gives the very large district of Shoreditch into which the constant supply was introduced in 1877.

(*The witness handed in Table. See Appendix U, 7.*)

29,246. We must take it, I am afraid, in detail, although there is a mass of figures. The table shows

the Shoreditch district comprised 11,861 supplies in 1882?—Yes.

29,247. Is that the total number of supplies in the district?—That was the total number of supplies commanded by the waste meters in the Shoreditch district.

29,248. That grows in 1898 to 13,282 supplies?—Yes.

29,249. I see that in 1882 you supplied in that district 36·8 gallons per head per day?—Yes.

29,250. And in 1898 that is reduced to 15·3 gallons per head per day?—Yes.

29,251. That is a diminution of one-half?—Of more than one-half.

29,252. What do you ascribe that to? To the improvement in the fittings or the discoveries that you made by the help of the waste meter system?—To both. The figures of supplies given for 1882 represent the district as it was before any proper inspection had taken place, and the figures for 1883, 1884, and 1898 give you the results of the reduced quantities caused by the inspection and by the improved fittings which were put in. The reduction is all due to the proper supervision of the district, with a staff of competent inspectors, and to the introduction of the improved fittings after their inspection.

29,253. You say that there has been an increased staff, an increased inspection, and therefore an increased expense?—Yes.

29,254. Has that been more than counterbalanced by the saving in the amount supplied per head per day?—Yes, very much. When we first went into this district we had a great many inspectors employed, but by the introduction of these proper and sound fittings a district does not get back to its old wasteful state, and it does not want so much supervision. At the present moment in this district of Shoreditch, which consists now of 13,282 supplies, the whole of that district, with the assistance of the waste meters is kept in order by two or three men, so that the expense in that district is comparatively very small indeed. When once it is cleared up and put into good order it takes very little to keep it so.

29,255-6. Now what is your next table? My head goes round and round with these masses of figures?—The next table gives the details of the table I have just handed in.

29,257. I do not think we want it then, unless you think those details essential?—There is only one thing I wanted to point out that the different rates, namely, the quantity per head in these districts—there are 19 of them—vary according to whether it is residential or whether it is a trade district. In the district of Shoreditch the conditions of supply are changing very much now. They are building large factories and warehouses and are getting a large trade supply. The largest of the figures in regard to the quantity per head is accounted for by the trade supplies, which are being put on there for the factories and the larger houses. They are doing away with the small residential houses, and building up large factories. These factories perhaps employ 200 or 300 men each.

29,258. Yes, but nevertheless all those changes are embodied, if I may say so, and included in your first table?—Yes.

29,259. (*Major-General Scott.*) Metered trade supplies are excluded?—Yes.

29,260. (*Chairman.*) Are there some trade supplies that are not by meter?—A great many, such as bakers and small trades.

29,261. (*Major-General Scott.*) How do you get paid for those; by agreement?—Yes, by agreement. We make a charge according to the trade; whatever the trade is we agree with the people as to what is a reasonable sum to charge.

29,262. (*Chairman.*) What is the difference between "consumption" and "waste"?—We divide the total consumption into two parts. The first we call "consumption" and the second "waste."

29,263. How can you separate the consumption from the waste—you only know that you supply so much to a house?—It is done in this way: the waste meter is applied to the district between the hours of 12 midnight and 5 in the morning, and what we term waste is the minimum quantity of water which is passing into that

district between those hours. That we say is waste, inasmuch as there is no consumption going on; it may not be absolute waste, but we are obliged to define it in some way, and we define it in that way. It may mean that some cisterns are filling up, or some small use is going on, but we term it all waste between those hours.

29,264. (*Major-General Scott.*) On the other hand there may be wilful waste in the hours when consumption is going to?—There may be certainly.

29,265. You do not take account of that?—That comes in the whole.

29,266. (*Chairman.*) Your inspector cannot possibly tell whether I have left my tap running from mid-day till six o'clock in the afternoon unless he happens to pop into my house during that interval?—Quite so, there is a great difficulty in that.

(*Mr. Pember.*) I suppose he must set off the waste during the day against the possible waste during the night. It is a rough and ready method.

29,267. (*Chairman.*) What is your next table?—The next table is for another district, Stoke Newington. (*The witness handed in Table. See Appendix U, 8.*)

29,268. This table is in the same style as the first you put in?—Yes, my Lord.

29,269. In Stoke Newington there are, I see, eleven waste meters?—That table is to illustrate the state in which we leave the district after we have cleared it up for constant supply; after the constant supply is turned on, and this is the final state in which we have the district as regards consumption.

29,270. You supply 10·9 gallons per head?—In that district, yee.

29,271. And of that you estimate 7·9 is proper consumption, and 3 gallons per head waste?—Yes.

29,272. Meaning by waste the quantity drawn from your mains between midnight and five in the morning?—Yes.

29,273. This does not throw any light upon the saving by the waste meters; what was it before you introduced your waste meters?—That I could not say; it was an intermittent district, and we have not got that figure.

29,274. (*Major-General Scott.*) Is this 7·9 the whole of the domestic consumption per head?—Yes.

29,275. It is remarkably small?—There are no trade supplies there. It is a residential district with small properties.

29,276. Not many baths?—Not so many baths as in other parts.

29,277. (*Chairman.*) These figures seem to show that there is an enormous waste going on in some districts of London?—There is an enormous waste, there is no doubt about it.

(*Chairman.*) It is a matter of millions of gallons a year.

(*Mr. Pember.*) Yes.

(*Major-General Scott.*) The consumption is 48 gallons per head in the Grand Junction.

(*Chairman.*) Yes, and 42 in the Southwark and Vauxhall.

(*Mr. Pope.*) Mr. Collins has got a table which your Lordship will probably be interested in, applying the figures of the results in the New River to the other companies, that is, supposing they could be accomplished by the other companies, showing what the total saving would be.

29,278. (*Chairman.*) Yes, I quite understand that. What is the next table; does that deal with another district?—Yes, it deals with another district, giving the consumption in 113 houses of a rateable value of 23l. to 26l. per annum in 1897, and another table gives similar information for 1898.

(*The witness handed in Tables. See Appendix U, 9 and U, 10.*)

29,279. (*Major-General Scott.*) Do these tables deal with a district in which the waste meter has been applied?—It has been applied; but these tables take the whole consumption as taken by an ordinary meter, and do not divide it into consumption and waste; they take the whole supply in the district.

29,280. (*Chairman.*) Here again, I do not see that these tables throw the slightest light upon the saving effected by the waste meter, and by proper inspection,

because they do not give us what was the consumption before?—No, they do not give you the consumption before; the first table gives you that.

29,281. I know; I get one table that is to the point, and then I get a number of other tables that are quite beside the point. I do not know what these tables are?—These show the variations of consumption in houses of different sizes.

29,282. In one the houses are from 23l. to 26l. rateable value per annum?—Yes.

29,283. And there the gallons per head per day are 15·9?—Yes.

(*Mr. Pope.*) I do not know whether your Lordship has noticed that in September there was an enormous consumption. Inspection was made, and waste found and stopped, and then that line which on the 1st of September showed 47·2 falls on the 1st of October to 10·8. There seems to be an enormous waste, therefore, during September. I should think that must have been a main.

(*Witness.*) No, it was inside the houses.

29,284. Was it?—We traced it out and found it.

29,285. (*Chairman.*) Then the next table gives the same houses?—The same houses, in another year—1898.

29,286. In 1893 the results are rather better?—Yes.

29,287. Your supply per head per day is reduced to 12·8 gallons?—Yes.

29,288. What is your next table?—The next table deals with a higher class of house—from 31l. to 46l. rateable value per annum.

(*The witness handed in Table. See Appendix U, 11.*)

29,289. There the consumption is larger, it runs up to 18·55 gallons per head per day?—Yes. You notice in that we give you the number of baths and everything.

29,290. Yes, baths, water-closets, cisterns, drawtaps, and so on?—You see there is a bath to each house in this table and a population of only 5·4 per house.

29,291. That almost balances the bath I should have thought. In the other tables what do you take the population per house—you have not stated the population in the other tables?—5·4.

29,292. The same?—In the smaller houses, yes.

29,293. That is below the accepted figure, which is 6 and a decimal?—Yes, it is; but as we get further out, so the population in the houses gets less. We do not go upon the largest average that was fixed by Lord Balfour of Burleigh's Commission; in these cases we take our own count from house to house.

29,294. Where is the district that this table relates to?—It is Whitehall Park, Hornsey, close to Hornsey Lane, by the Archway.

29,295. The previous table relates to the same, does it?—To a district close to there.

29,296. (*Major-General Scott.*) Is this district in your last table in what you consider a proper condition?—Yes, it is in very good order as regards fittings.

29,297. Is it in good order as regards waste?—Yes.

29,298. Do you think that no further improvement is likely to occur?—I do not think so. I do not think we will get very much better in that district.

29,299. (*Chairman.*) You have got two months there where the consumption was excessive in the winter November and December?—Yes.

29,300. You made an inspection and found waste and stopped it?—Yes. Directly we find the consumption is going up we go and stop it.

29,301. Does your next table deal with the same houses?—Yes, for the next year.

(*The witness handed in Table. See Appendix U, 12.*)

29,302. There you have got it down lower still?—Yes.

29,303. To 16·77 gallons per head per day?—Yes.

29,304. Just tell me what your next table shows?—The next table represents a district in the City of London, which we call the Tudor Street district. I took that out as being a district where the consumption went abnormally high. It is owing to the shifting population coming in and out of the City. They are working printers, and they are working all day and also all night. The consumption is very heavy there.

Mr. E. Collins.

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Mr. E.
Collins.

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The daily supply is 59·4 gallons per head, of which 32·8 is consumption, and 26·6 waste—dividing it in that way.

(*The witness handed in Table. See Appendix U, 13.*)

29,305. (*Mr. Pope.*) You mean it is consumed during the day or night?—We call it waste, but it really means night consumption in that case.

29,306. (*Chairman.*) You mean by your column of "daily waste" in this table, that that is the quantity that goes from the mains between midnight and 5 o'clock in the morning?—Yes.

29,307. But you say there is a night population legitimately using it?—There is a night population there legitimately using it.

29,308. Have you many districts where the consumption is 59·4 gallons per head per day?—Yes, we have some.

29,309. Because that swells your average tremendously?—That is the point. You see, in the outlying districts with small property we can reduce it down to say 15 gallons per head; but our 30·5, which was our average all through the district, is, of course, made up of these districts where the supplies are abnormally heavy.

29,310. This is in the City of London, is it?—Yes.

29,311. Do you charge lower rates upon these premises that use 59 gallons per head?—There are no meter supplies in those. Where they are trade supplies we charge those trades by agreement in accordance with some scale of charge which we have.

29,312. (*Major-General Scott.*) Is this 59 gallons per head legitimate consumption?—There is no waste.

29,313. What do they do with the water?—They use it.

(*Mr. Pope.*) For washing the type, and so on. It is a district which is inhabited largely by printers who are working day and night.

(*Major-General Scott.*) Frequently it is a trade supply although it is not metered.

29,314. (*Mr. Pope.*) No doubt that is so.

(*Chairman.*) I forget—these statutes are so intricate—whether you have a right to insist on their taking a supply by meter when it is a trade supply?—No. It is by agreement.

29,315. (*Major-General Scott.*) You are not obliged to supply except for domestic consumption, are you?—I believe as the law stands they can force us under certain conditions to give them a meter, but I think there is some difficulty in our forcing them to take water by meter.

29,316. (*Chairman.*) You can say, this is not a domestic supply at all and I will cut it off, can you not?—We do meter a great many of our trade supplies wherever we can.

29,317. But this district you do not?—This district is not so much metered as the others.

29,318. Now, what is your next table?—It applies to the district of Finsbury Park.

(*The witness handed in Table. See Appendix U, 14.*)

29,319. That deals with 123 houses of a rateable value of about 150*l.* per annum per house, and with gardens, I suppose?—Yes, they have got large gardens—comparatively large gardens, for London; they are houses with perhaps a quarter of an acre, or something like that.

29,320. Their supply per head per day is 32·5 gallons—

(*Mr. De Bock Porter.*) 105 gallons on one day.

(*Witness.*) In June—that is the height of summer—it was 105·4 gallons per head per day.

29,321. (*Chairman.*) I see you have put down all that 87·1 gallons as being waste?—Yes.

29,322. Why?—Because they had hoses out in the gardens letting the water run to waste on their garden lawns.

29,323. All night?—All night.

29,324. Again, does that column of "daily waste" mean what is consumed between midnight and 5 in the morning?—Yes, that is night consumption.

29,325. You call that waste. Have they not a right to do that? I mean if they pay for their gardens. I suppose they have a right to water their gardens at

night?—A man pays a charge for his garden, but I do not think they have got a right to do that, but how can one stop them.

29,326. (*Major-General Scott.*) You can meter their garden supplies, can you not?—It would accumulate meters so much. It is not worth doing in these small gardens. Large gardens we meter, but we do suffer terribly in the summer time from those sprinklers, which are put out on the gardens to water the lawns.

29,327. They are very visible things; if your inspector were to go round and find them I suppose he would have a right to object to them—

29,328. (*Chairman.*) That is just what I am saying; I doubt whether he would. If they pay you for their supply to their gardens they might water their garden as much as they like, and at what hour they like, might they not?—I am afraid they may. We try to check it as much as we can. We remonstrate with people.

29,329. On the 22nd September, when I suppose there is no watering of lawns at night, the consumption in this district shown on this table drops down to 32½ gallons per head per day?—Yes, they are a good class of houses, and, I believe, the fact is that a great many people are out of town just then.

29,330. But still even then, even on the 22nd September, they use at night 7·6 gallons per head per day?—Yes.

29,331. What was that due to?—That, I suppose, would be the same sort of thing—garden taps left open, or something of that sort.

29,332. What do you charge for a garden?—Quite a nominal charge, sometimes it is 5*s.* a year.

29,333. Are you limited by statute to what you can charge for a garden?—No, it is by agreement.

29,334. Why do you not stick on 25*s.*?—We would be only too glad if people would pay it.

(*Mr. Pember.*) They can do it, as a matter of fact; I have just had the statute looked up.

29,335. (*Chairman.*) You say you would be only to glad if you could; what prevents you?—People would not pay it.

29,336. You might cut off their water?—We never cut it off if we can possibly help it.

(*Mr. Pope.*) There is the mere unpopularity of doing a thing of that kind. They would rather supply the water. We should have the population in arms against the water companies.

(*Mr. Pember.*) The garden is not a domestic purpose, that is quite clear. Mr. Pope does not mind my reading it for him to save him the trouble. I see that clause 41 of their Act of 1852 says, "The company shall, at the request of any consumer of water,"—which shows, in fact, that that has been tried, that he must be a consumer of water—"for purposes other than the purposes for or in respect of which the rates or charges are herein-before provided or limited, or at their own instance"—that is domestic—"afford a supply of water by means of a meter or other instrument or mode for measuring and ascertaining the quantity of water so supplied," and then may charge accordingly; and then the rates are given.

(*Chairman.*) Per 1,000 gallons.

(*Mr. Pember.*) "When the quarterly consumption of water shall not exceed 50,000 gallons, 7½*d.*; when exceeding 50,000 gallons and not exceeding 100,000 gallons, 7*d.*; when exceeding 100,000 gallons and not exceeding 200,000 gallons, 6½*d.*; when exceeding 200,000 gallons, 6*d.*;" and then there is an extra for high service.

(*Chairman.*) Is there any provision anywhere enabling them to charge by agreement.

(*Mr. Pember.*) That is optional; there is nothing to prevent them supplying by agreement.

(*Chairman.*) Perhaps you find that the charge you do get by agreement is better than that statutory charge by meter.

(*Mr. Pember.*) That could not be because it is 7*d.* per thousand under 50,000 gallons.

(*Mr. Pope.*) Not in the individual case but in the lump it may be so.

(*Chairman.*) Five multiplied by 7 is only 35*d.*, say 3*s.*, whereas they get 5*s.*

(*Witness.*) There is a great deal of expense in metering, such as reading them. A great deal of work attaches to it, and we should be supplying it for a garden where it is only required for two months or three months in the year. It is hardly worth while putting it in.

29,337. (*Chairman.*) Then, I say, do you find, practically, that the 5s. that you get by agreement for the garden is better than having recourse to a meter with all its attendant expenses and the statutory charge?—I think we should get a great deal more by meter.

(*Mr. Pope.*) You can easily calculate it. The total supply shown on this table is 116,200 gallons, and the total waste, that is to say, what should go to the gardens, 96,000 gallons; 96,000 gallons at the price of this schedule would hardly compensate you for fixing a lot of meters in 123 houses.

(*Mr. Pember.*) I think I accepted a figure which was not quite right. Your Lordship said, 7 times 5 make 35d., as against the 5s., and that figure guided me, but, as a matter of fact, you see it is 7½d. per thousand gallons up to 50,000, and supposing they used 50,000 gallons that would be, in fact, over 25s.

(*Chairman.*) Yes. The New River Company is so prosperous that perhaps they do not mind these trifles of 96,000 gallons a day.

(*Mr. Pember.*) In the same way I can tell your Lordship, the East London are not bound to supply anybody with water for other than domestic purposes except by meter; they are not bound and I believe most of the other companies are in the same position. The Kent and the Lambeth are not bound to supply at all.

(*Mr. Rickards.*) No more are the Chelsea.

(*Mr. Pember.*) Then there are three not bound to supply at all. I do not know that that is very instructive.

29,338. (*Chairman to Witness.*) Now, have you any more tables?—Yes, there is one in which I have worked out the savings that the different water companies might effect if they reduced their average consumption to the same rate per head per day as the New River Company.

(*The witness handed in Table. See Appendix U, 15.*)

29,339. I understand that the average consumption per head per day of your company throughout its district is 30½ gallons?—That was so in 1897.

29,340. Is it more now?—For 1898 it was 31.5.

29,341. If the consumption of all the companies were cut down to that standard, you say that in 1897 they would have saved 28,006,049 gallons per day?—Yes.

29,342. And in 1898 they would have saved 22,743,253 gallons per day?—Yes. That figure, of course, is much less, because the East London were not giving their full supply during last summer. That naturally reduced the figure very considerably.

(*Chairman.*) The great sinners, if I may use the phrase without any offence, are the Grand Junction and the Southwark and Vauxhall.

(*Mr. Pember.*) Rather they are greatly sinned against; is that not it.

29,343. (*Chairman.*) I mean the people who are far in excess of the average are those two companies and the Chelsea; can you account for that? Why does the Grand Junction have a consumption of 48.8 gallons per head per day as against your 30.5?—I cannot account for it; it is waste.

29,344. Is it waste?—I should say it is waste. All I can say is what we have done in our own district, and I look upon that as a representative district of all the different classes of houses throughout London. We have large houses, small property, and very poor property, and some very big property.

29,345. We have had more complaints of waste from the East London than from any other company, but the East London was only, in 1897, 32.4 gallons per head per day?—Yes, that is so. They are working very hard, and they are making great efforts to reduce their waste in the East London.

(*Mr. Pember.*) I can give you one reason why, in some of the companies, the consumption appears to be much greater than it really is. For instance, take the Grand Junction, that has got a lot of big hotels. A big hotel, of course, is supposed to have only a very small resident population—say the manager and a certain

number of servants, but, as a matter of fact, there are all the guests there, and they are not taken into consideration. They use an immense quantity of water, but they are not counted in the population, so supposing for instance there is 1,000 gallons used in a hotel in a day, that perhaps is put down to 20 people, when, as a matter of fact, it may be nearer 200 than 20.

(*Chairman.*) I see.

(*Witness.*) That calculation applies equally to our own company, and indeed to all the companies.

(*Mr. Pember.*) Yes, but of course it varies.

(*Witness.*) We have the largest hotels and clubs in our district, and the railway stations.

29,346. (*Chairman.*) Where are your hotels?—We have got the Grand Hotel, the Hotel Victoria, and the Hotel Cecil.

29,347. Are those hotels in the New River Company's district?—Yes, and the First Avenue Hotel, the Great Great Northern, and the Midland.

29,348. (*Major-General Scott.*) Have you any idea what the saving of money in the maintenance and management would be, supposing such a saving in water were effected?—Of course that depends upon the price at which you take the water.

29,349. The cost of maintenance and management per million gallons, I see in Mr. Lass's tables is about 12l. per million gallons delivered?—That is pumping and filtration.

29,350. For maintenance and management he gives the whole cost at 12l. per million gallons?—Does that include rates and taxes.

29,351. I have only glanced at it, and I cannot tell you, you have not made that out at all, you have not gone into that at all?—I have not gone into that. Of course if you take it at the selling price of water, a million gallons a day would be a very large bulk of water saved in the year, and it would mean a very large sum of money; at 6d. a thousand it would run up to 9,000l. a year.

29,352. (*Chairman.*) And as far as I can see that does no good to any human being?—Not the slightest.

29,353. It is pure waste?—Pure water running away down the drain, it is no use to anybody.

(*Mr. Pope.*) Your Lordship asked for figures with regard to other companies. Mr. Restler of the Southwark and Vauxhall Company is not able to be here, but Mr. Collins will put in for him two short tables, which give the Southwark and Vauxhall Company's figures.

(*Chairman.*) Do you mean figures of its operations for checking waste?

(*Mr. Pope.*) Yes.

(*Chairman.*) Just let me see what they are, because I am overdone with tables.

(*Mr. Pope.*) Your Lordship suggested this should be put in the form of a table, although I suggested it should be put in the form of evidence.

(*Chairman.*) I did not expect it would be put in the form of 12 tables.

(*Mr. Pember.*) It is according to the law, my Lord, 12 tables.

29,354. (*Mr. Pope to Witness.*) Do you know what Mr. Restler's tables show?—They are in confirmation of the tables I have put in; they show the same effect.

(*The witness handed in Tables. See Appendix V, 14 and V, 15.*)

(*Mr. Pember.*) Without putting in a table, perhaps you will let me state for the Lambeth Company that by similar means they have reduced the consumption in a certain number of districts from 30.54 gallons down to 19.76. I have a table here, but I do not propose to put it in.

(*Chairman.*) On what proportion of their district?

(*Mr. Pember.*) I have here a very long string of districts, 43 of them, and I see that the number of supplies in those 43 districts is 22,707.

(*Chairman.*) What is the total number of supplies of the company?

29,355. (*Mr. Pember.*) 110,000; so it is one-fifth, the population being 158,000?—The consumption per head in those districts was before they set to work 30.54 gallons, and since they have set to work it is 19.76. The table is at your service.

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(Chairman.) Those are not your worst districts, because I see your average is 35.4 per head.

(Mr. Pember.) They may not be, but they contain uncommonly bad ones, which I take it are the worst. There is a district which did consume 68 gallons, and which now consumes 47 gallons.

(Chairman.) 68 gallons per head per day.

(Mr. Pember.) Yes, and now it consumes 47, they have reduced in that particular district 68 gallons to 47.

(Chairman.) How long has it taken to operate that particular reduction?

(Mr. Pember.) It takes from three weeks to three months, I am told, according to the size and the difficulties in the district.

(Major-General Scott.) Does the district go back again?

(Mr. Pember.) There is a tendency to revert to the original type, but, of course, it is kept up, I suppose, by inspection, which involves a certain amount of expense. You will understand that excludes meter supplies, as all the other papers did.

29,356. (Chairman to Witness.) You are fathering these tables of the Southwark and Vauxhall?—Yes.

29,357. What district do they apply to?—The locality of the district is given in the second column; for instance, in the first of them you have Richmond Street, Walworth as No. 9 District, and then Harleyford Street, Kennington.

29,358. Are these selected districts? Why are these picked out by the Southwark and Vauxhall?—They are selected districts.

29,359. Are they the only districts in which an attempt to reduce waste has been made?—No, they are doing it all through their districts.

29,360. Why have those been picked out; why do we not get what has happened in the whole?—You get the whole in their total consumption.

29,361. I mean why are these districts picked out instead of giving us the whole of the Southwark and Vauxhall district?—It would want such a very long table to give the whole.

29,362. You might give the results, two lines would have given the whole results?—The final result is given in the total average consumption for the year.

29,363. (Mr. Pope.) In your tables, you mean?—Yes.

29,364. (Major-General Scott.) Are there any districts in which they have not taken measures to check waste;

The witness withdrew.

After a short adjournment.

Mr. GEORGE CORBLE called and examined.

Mr. G.
Corble.

29,368. (Chairman.) You have been clerk of the Lea Conservancy Board for the last 30 years, I believe?—Yes.

29,369. Are you well acquainted with all the district within the watershed area of the Lea?—I am.

29,370. The place where the Lea rises varies according to the season a little, does it not?—The principal spring is up at Luton, in Bedfordshire, some 25 to 30 miles above the town of Hertford. Then there are a great many tributary streams that join it lower down.

29,371. I do not know that we need enumerate those, nor do I think we need go into the very early history of the Lea navigation, which is a very ancient navigation, I believe?—Very ancient.

29,372. With Acts of Parliament going back to the year 1474 regulating it?—That is so.

29,373. What is the trade that now uses the Lea principally?—The trade principally is in coals, bricks, building materials, timber, gravel, malt, wheat, barley, and other cereals, meal, oil, flour, gunpowder, and dangerous or explosive goods, manure, and gas lime. About 600,000 tons per annum now pass over it.

29,374. Where do the building materials go to or come from?—To and from London—starting from London to Tottenham, supplying the large district of Walthamstow further up to Edmonton, Waltham Abbey and to Ware and Hertford.

are there districts which are still in a bad condition?—There may be a few districts, from what Mr. Restler tells me, but he is gradually bringing them under the waste meter system. He has 196 meters at work now.

29,365. Then he has omitted the districts in which no measures have been taken, I presume?—He was asked, I believe, to give certain cases, not the whole.

(Mr. Pope.) He was not asked by anybody to give certain cases, certainly.

(Chairman.) Nobody asked that.

(Mr. Pember.) I would venture to suggest that we have almost gone far enough into this. After all, it is only useful as showing an indication that the 35 gallons of the Royal Commission is plenty.

(Chairman.) It goes a little further than that.

(Mr. Pope.) Yes, that it may be reduced beyond that.

(Mr. Pember.) Yes, but I mean that is the tendency of it. Of course, it is done at very considerable cost. There is no doubt about that.

(Mr. Pope.) But when once it is established, the cost is comparatively small.

(Witness.) Comparatively.

(Mr. Pope.) It is not so expensive then.

(Witness.) It is not so expensive when once it is properly in order, with proper fittings.

29,366. (Mr. De Bock Porter.) There would be a very considerable profit if carried out generally, would there not?—It is the most profitable thing that can be done in waterworks management to reduce the waste.

29,367. Have the companies only recently turned their attention to it?—No, we have been at it for the last 20 years; we have been working at this waste in the New River district, and the other companies, as well, have been working at it.

(Chairman.) We have been told by several of the companies that their whole energies were absorbed by changing intermittent supply into constant supply, and it was only when their constant supply was almost finished that they were able to devote some part of their time and attention to waste.

(Mr. Pember.) That is true of most of them.

(Witness.) We have gone on rather a different system; as we have introduced the constant supply, so we have cleared the districts before we have left them.

29,375. Do you mean that all those districts are supplied with bricks from London?—With lime and cement principally; there is a great brick trade at Ware, and that brick trade goes down the river.

29,376. You say the trade is 600,000 tons per annum? It is.

29,377. What do the tolls amount to?—Last year they were 15,577*l*.

29,378. (Mr. De Bock Porter.) Do they increase?—They vary; there has been a large increase from what they were 20 years ago, in spite of the railway competition. We have the Great Eastern Railway running almost parallel with the river the whole way from Hertford to London, and in spite of that competition, which is very keen, we are able to keep up our traffic.

29,379. (Chairman.) I suppose that traffic in building materials is a traffic which a canal suits; there is no hurry about time?—It suits it.

29,380. You talk about gunpowder; is that the Royal factory at Waltham Abbey?—That is so. I may say that the whole of their explosives go down the Lea to Bow Creek, and so into the Thames and on to Purfleet.

29,381. And there is the factory at Enfield also which is served by you?—The Small Arms factory—the rifle factory there.

29,382. You say your tolls were 15,577*l*. last year. What rent do you get from the water companies?—3,500*l*. a year.

29,383. Have you real property besides?—We have certain real property bringing in rents of about 1,300*l.* per annum.

29,384. And is there an item of 1,129*l.* for extra rents?—Those are extra payments by the water companies.

29,385. The water companies pay you 3,500*l.* as a regular rent, and an extra rent of 1,129*l.*?—The first is paid under an Act of Parliament, and the second item, 1,129*l.*, is a voluntary contribution they have made lately.

29,386. Since when?—They have paid us for five years an extra contribution of 1,500*l.*, and nearly two years ago they reduced that to 1,129*l.* odd.

29,387. In respect of what was that voluntary contribution made? Why was it made?—The first part was practically to repay us an item of 6,000*l.* we had expended upon a big lawsuit with the town of Hertford about the sewage, and what with that and some communications we had with the companies, thinking that they ought to contribute something more to the funds, they gave it in that way. Since that terminated, that is, at the end of that five years, we approached them again to continue that 1,500*l.*, and they agreed to pay, between the two companies, this 1,129*l.*

29,388. I suppose that is all right, but it strikes me as a curious transaction, a statutory conservancy board getting voluntary contributions from two statutory companies?—They were kind enough to help us in our funds.

29,389. And no shareholder raised his voice?—I have not heard that they did.

29,390. (*Mr. Pember.*) I did not quite catch whether the 1,129*l.* is apiece or between them?—It was between the two companies. It was in certain proportions that they settled among themselves.

29,391. (*Mr. De Bock Porter.*) And, at the present time that is a purely voluntary contribution?—Quite so.

29,392. (*Chairman.*) I believe the proportion is 425*l.* New River and 700*l.* East London?—That is so.

29,393. (*Mr. Pope.*) Is there any agreement, as in the case of the Thames Conservancy, to take more water from the Lea, or anything of that kind?—No.

29,394. (*Chairman.*) Were you to shut your eyes to any extra pumping in consideration of that payment?—No.

29,395. Or to take less than your statutory navigation quantity?—Nothing whatever.

29,396. A pure gratuity?—Quite a gratuity. We complained to them, I may say, in rather a piteous way, that our funds would bear increasing.

(*Chairman.*) What was that to do with them? You might come and complain to me, and I should have much sympathy.

(*Mr. Pember.*) That is what the clergymen do to me daily, but I do not answer them.

29,397. (*Mr. De Bock Porter.*) I suppose the water companies were interested in the action that you fought against the town of Hertford?—Yes.

29,398. And that was in their interest—

(*Mr. Pope.*) It was a question of the purification of the Lea.

(*Witness.*) In fact, we thought, at the commencement, that they ought to pay for it, and when we approached them later on they made this contribution of 1,500*l.* a year.

29,399. (*Chairman.*) Last year you say it was 1,129*l.*?—Yes.

29,400. That makes the total receipts for last year 21,429*l.*?—Yes.

29,401. On the other hand, what is your expenditure?—We have the interest on our debt, 7,525*l.*

29,402. We will pause upon that. When was that debt contracted, and what is it?—It is a perpetual debenture stock, 4 per cent. The debt in 1850 was about 40,000*l.*, and that has gradually increased since up to 188,132*l.*

29,403. I suppose that is under statute?—It is under statute. Our borrowing powers go to the extent of 230,000*l.*

29,404. 7,525*l.* interest on your debt. Then what do you pay for works, wages and maintenance?—11,650*l.*

29,405. And what do the Conservators get?—1,000*l.* a year. That is fixed by the Act of Parliament.

29,406. Then you are obliged to have a sinking fund. I suppose, for your debenture debt?—Yes, that is fixed by Act of Parliament, 1,500*l.*

29,407. Making a total of how much?—21,675*l.*

29,408. That is more than your receipts?—It is, but in some years the tolls are better and we are able to carry a small balance over, but taking our receipts and payments, they fairly balance each other.

29,409. You are solvent?—We are solvent and paying our 4 per cent. on the whole of the debenture debt.

29,410. (*Mr. De Bock Porter.*) But you would not be but for the voluntary contribution of the water companies?—We should not be able to put by the sinking fund. The Act says we shall put it by; but if we have not got it, we cannot.

29,411. Do you invest the sinking fund separately?—That is invested separately, and we have reduced the debt during the last four or five years some 10,000*l.*, by buying up our own stock in the market.

29,412. (*Mr. Lewis.*) Do you cancel the stock?—Yes.

29,413. (*Mr. De Bock Porter.*) What price does that debenture stock stand at?—About 125*l.* It is worth more.

29,414. (*Mr. Pope.*) Is it quoted on the Stock Exchange?—It was quoted on the Stock Exchange for some time, but there are so few transactions in it that they struck it off the list. That is their rule—unless you have a certain number of transactions within a given time, they will not encumber their list with it.

29,415. That would account for its being a little low in price probably?—It would.

29,416. (*Chairman.*) When was your lawsuit with Hertford?—In 1884.

29,417. I see Lord Balfour's Commission noticed this Hertford sewage and the pollution arising from it?—It did.

29,418. And your action or suit—I do not know which it was—against them was since that?—No. It was before that. It was in 1884.

29,419. Did you fail or succeed?—We failed, unfortunately.

29,420. Has anything been done since Lord Balfour's Commission to stop it?—We have been in continual communication with the Local Government Board. It is rather a complicated question, under the Hertford Sewage Act of 1854, whether the Board of Trade could act as judges in the matter of this Hertford sewage. The Board of Trade, the Home Office, and the Local Government Board within the last four or five years went thoroughly into the matter. They had the advice of their Law Officers and they were of opinion that the Board of Trade could not interfere under that Act. We thought we would try that as another tribunal, as the lawsuit failed us.

29,421. (*Major-General Scott.*) As a matter of fact nothing has been done then?—We of course paused before entering upon another expensive lawsuit. That was the only remedy we should have.

(*Mr. Pember.*) May I interpose here, and tell you that since all this—I daresay this witness may not know it—there is an arrangement now going on which I think I may say is fairly concluded between the corporation of Hertford and the East London Company, that the East London should take over those works and do it themselves.

(*Chairman.*) The sewage works?

(*Mr. Pember.*) Yes.

(*Witness.*) I knew that scheme was in progress, but I did not quite know that it was finally arranged.

29,422. (*Chairman.*) Was it the water of the Lea that Hertford polluted with its sewage?—The water of the Lea just below Ware Lock, below the intake of the New River Company, but some 15 miles above the intake of the East London Water Company.

29,423. Do you mean to say there was no remedy under the Rivers Pollution Act against a town pouring its sewage into the river?

(*Lord Robert Cecil.*) Yes; but the learned judge before whom it was tried found there was no pollution.

(*Witness.*) Although the river was as black as your hat, and you could smell it a quarter of a mile off.

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(Lord Robert Cecil.) That is what the unsuccessful litigant commonly says.

(Witness.) The Judge said it himself. He went down twice and visited the place.

29,424. (Chairman.) And yet he held there was no pollution?—He said, as he was an old fox hunter, he did not want any scientific evidence; he followed his nose and followed the line of the river.

29,425. And yet he said there was no pollution?—No pollution.

(Mr. Pope.) Within the meaning of the Act.

(Mr. Pember.) I suspect that that had a legal meaning—within the meaning of the Act.

(Lord Robert Cecil.) No, I think not. I think if you read the judgment, you will see what he said was that the apparent pollution was due to vegetable growths in the river and not due to the sewage.

(Major-General Scott.) I have read the judgment very carefully, and I certainly did not come to that conclusion. However, I must bow to your professional opinion.

(Lord Robert Cecil.) You are much more likely to be right than I am.

(Major-General Scott.) I think he said that there was not that degree of pollution which was indictable under the common law.

(Mr. Pember.) That is what I suspect it was, because I know that the corporation of Hertford did treat the sewage to a certain extent, because I have been over the works.

29,426. (Chairman.) Unless you see anything very material in it, I do not think we need go into the old history of the taking of the water from the Lea?—No.

29,427. We know what the present powers are under the Act of 1855?—You have already had that in evidence.

29,428. That is that the navigation comes first of all?—Yes.

29,429. Then the New River Company with 22½ million gallons?—Yes.

29,430. Then the East London Company with a similar amount; and then the two companies take all the residue, if any, *pari passu*?—That is so.

29,431. We have had put before us certain gaugings of the River Lea?—I believe so.

29,432. Have you seen them?—I have not.

29,433. I do not want to put in a fresh set of gaugings if those are right?—I have not seen them.

29,434. Who does gauge the River Lea?—An officer of the Conservancy gauges it at Feilde's Weir. The gaugings are worked out by an expert in London, and a copy is supplied to the New River Company, the East London Company and the Conservancy. Therefore, there can be no dispute as to the gaugings; they must all tally.

29,435. Is Feilde's Weir below the intake of the New River?—Some eight miles.

29,436. So that what passes at Feilde's Weir is minus the take of the New River, whatever it may be?—Quite so.

29,437. You say that is gauged by the Conservancy?—By the Conservancy.

29,438. Have you got those gaugings there?—All the gaugings up to 1891 appear in the Reports of the last Royal Commission. Since then this table really gives them year by year from 1851 and 1852; then there is a break; I suppose we had not got them up to 1856. Then from 1873 they go on up to 1898.

(The witness handed in Table. See Appendix Y, 4.)

29,439. This is correct, is it?—This is correct. That gives the discharge in million gallons per day for each year; it gives the maximum, the minimum and the mean. In addition to that I have, since 1891, all the monthly gaugings; but those are not yet in print. If your Lordship would like to have them, we will have them printed.

29,440. I think the yearly gaugings will be enough, as far as I can see at present. I may rely upon these, may I, as being the accurate gaugings of the River Lea?—These are merely the totals for the year.

29,441. As I understand you, down to the year 1891, those gaugings appear in the evidence of the Balfour

Commission?—They do. They were given by our late engineer, Mr. Child.

29,442. I see that the Lea fluctuates a good deal?—It does.

29,443. And that last year, for instance, the maximum of million gallons a day at Feilde's Weir was 198½, and the minimum only three-quarters of a million?—That is so.

29,444. That gives an average of 22½ millions only?—For the whole year.

29,445. Has there ever been a year so low as that?—Apparently not, by the Table.

29,446. (Mr. Pember.) The next lowest year was 1874?—1874.

29,447. (Chairman.) Your experience goes back 30 years?—1864 was a very dry year, so was 1868.

29,448. Was it as dry as 1898?—I do not know, we have not got the gaugings. I do not think we kept them so regularly then as we do now. We do not seem to have kept them.

29,449. Then you are not able from memory to say whether it was a bad year?—I cannot remember; but I know the river was very low in 1864 and 1868.

29,450. At any rate, since 1864 you have had nothing so low as 1898?—Nothing.

29,451. Was the navigation stopped at any time during 1898?—Not above the Old Ford lock within three miles of London.

29,452. That is the next lock above Limehouse Cut?—Yes. I do not think above that we had any barges stopped, or if they were stopped, it was for perhaps an hour or something of that sort.

29,453. Do you mean they were stopped below that?—Below that, sometimes in the Limehouse Cut owing to the exceptional neap tides, we would have barges stopped for perhaps 24 hours; but that only now and then.

29,454. Do you mean that that was peculiar to 1898?—It is not peculiar to that time. When the tides are very short, indeed, we generally have barges delayed from time to time there.

29,455. In the Limehouse Cut?—Yes.

29,456. I was asking you whether there was anything peculiar in 1898; was there anything in 1898 that interfered with the navigation beyond other years?—No peculiarity. Perhaps we were not able to send down quite so much water as we were in other years, to help the Limehouse cut. But the complaints were not much more frequent then than we have had before.

29,457. You shall have it whichever way you like. I want to know whether this extraordinarily dry year interfered with the navigation in any way, and if so, where and when?—It would only have affected it in the Limehouse Cut.

29,458. Why should it affect it in the Limehouse Cut?—That place is very peculiar, and requires a great deal of understanding.

29,459. Well, we will open our minds to anything you choose to give us?—The Limehouse Cut goes from the Thames, and it is about a mile and a half in length, and at neap tides we may have the water perhaps 18 inches or 2 feet under head.

29,460. (Major-General Scott.) Limehouse Cut is the red on the map, is it?—The red. It would be impossible to fill that up by passing the full quantity down from above.

29,461. (Chairman.) Why?—Because before that could be done the next tide would go out, and we should have the cut in just the same condition.

(Mr. De Bock Porter.) That is because the whole of the water has been taken.

(Mr. Pember.) No.

(Witness.) We could not do it.

29,462. (Sir John Dorington.) Has the Limehouse Cut got gates at the mouth?—There is a lock at the mouth, and the tide likewise enters at the other point at Bow; so that the tide comes in at each end and meets in the centre.

29,463. Of course, that is locked also?—Yes.

29,464. So that Limehouse Cut is really a canal?—And partly tidal. It is affected by the state of the tide.

29,465. (*Chairman.*) What I want to understand about the neap tides is this. The neap tides were not lower in 1898 than in other years?—No.

29,466. Then why was the Limehouse Cut affected in 1898 beyond other years?—Because probably in other years we were able to send down a little more water from above.

29,467. Very well, then, it was the failure of the water from above that interfered with the navigation in the Limehouse Cut in 1898?—Coupled with the fact of extraordinary neap tides. I have said that there was no difference; but I think one or two of the neap tides were exceptionally low this last summer.

29,468. (*Sir John Dorington.*) Why cannot the water be held in that reach if there is a lock at the mouth and a lock at Bow Creek?—Because it is regulated by a weir up at the pond, at Three Mills. We cannot head the water up above that. That is a matter of arrangement with the miller—the Three Mills have a certain right to the water flowing over that weir.

29,469. That settles the level in the cut?—Yes.

29,470. As a matter of fact, you can never keep the water at a higher level in the cut than that weir?—No.

29,471. But you can always maintain it at that level?—If we can fill up the cut.

29,472. But the cut is full at high tide?—Yes, at full tide; at what we call spring tides, it is always full.

29,473. It cannot be above the level of the weir?—No, it begins to run over that directly the tide turns.

29,474. And runs away down to the level of the weir?—Yes. The tide comes up by Bow Creek, and likewise in the Limehouse end.

(*Mr. Pope.*) I understood that he told us at neap tides, and especially at extraordinary neap tides, the cut is not full, and that it waits for the upland water in order to raise it to the level of the weir in question.

29,475. (*Sir John Dorington.*) At the neap tides the cut does not fill up to the level of the weir?—Not by a long way sometimes.

29,476. And then it relies upon the upland water to raise its level to the level of the weir?—That is just so.

29,477. (*Chairman.*) I suppose the difficulty of getting enough upland water is that the companies have taken it?—I cannot deny that.

29,478. I do not want you to deny anything which is true?—If it is taken from above, we cannot get it below.

29,479. That is the reason; it is not that there is not water enough in the river if it was taken, but that it is taken?—At times it would be no good; we could not do it in the 24 hours. We could not get the water passed down. For this reason: We cannot simply open the lock slackers and let the water run right away through, say, from half way up the river down to Limehouse Cut. We have to pass it according to the Act of Parliament—measure it lockful by lockful without a barge in the lock. We have to fill the lock, empty it and keep record, because the companies can compel us to under the Act of 1855, and our books have to be open to their inspection. And to do that, as you will see I have explained it later on, we should have to stop the traffic while that was being done.

29,480. Supposing the companies took nothing at all, and the full flow of the Lea were allowed to go down, you say you could not pass it into Limehouse Cut in time to prevent this inconvenience to the navigation?—Not altogether, unless we stopped the traffic for the day. Might I shortly put it in this way. Our total quantity we are allowed by the Act to pass down is 5,400,000 gallons in the lower reach. I put it at 76 locks, but really it is 77 locks, which comes to 5,390,000 gallons. To pass the ordinary traffic would take about 30 locks. To pass the other 46 locks, it averages from 10 to 15 minutes to fill a lock and empty it; so that would take 46, multiplied by, say, 15.

29,481. (*Major-General Scott.*) If it was not for the supply required by the companies, there would be no necessity to limit you to five million gallons, or anything else?—It does not affect it when there is plenty of water in the river.

29,482. (*Chairman.*) No, but this is a difficulty that exists quite independently of the takings of the companies?—Quite so.

29,483. You say you are obliged to pass the water down from the upland reaches to the lower one, lock by lock; you cannot lift all your locks and let it all run down?—The companies would have something to say to that.

(*Mr. Pember.*) And so would the navigation.

29,484. (*Chairman.*) It is lock by lock, and you say there are 46 superfluous locks, so to speak, over and above what the navigation want?—Just so.

29,485. Which will take 10 minutes apiece to pass down?—Quite so.

29,486. That is, 460 or 500 minutes to pass water down, and there is not time in the 24 hours to do so?—That would take a long time—some six or seven hours.

29,487. (*Sir John Dorington.*) I suppose in flood times there are some bye-passes through which the water comes down without passing the locks?—Yes, round the old back Lea and that district.

29,488. That does not come down your way at all?—It does not come through the navigation.

29,489. In fact the navigation is controlled as a navigation by the water companies. The water companies have all the River Lea, except so much as is required for lockage, which is estimated at five million gallons, is that so?—Exactly so.

29,490. (*Chairman.*) And that is a quantity you cannot pass down in time to make it useful?—Unless we stopped the whole of the traffic. If the traffic were continuous and kept on the whole day long, and we kept locking down as hard as we could, we might get that quantity down; or, after we had done with the traffic, if the companies said, "You can open all your sluices, and let it all run right away down," we could get a lot down in that way.

(*Sir John Dorington.*) In fact, there is no road for the river as a river into the Limehouse Cut—the only road is as a canal.

(*Mr. Pember.*) That is so.

(*Witness.*) That is so. At very exceptional times we have done this. Some years ago, when there was a great outcry about pollution at Tottenham, there were great public indignation meetings held, and we stopped the traffic on the river that passed on the Sunday, and simply pulled up the slackers of each lock, and we flushed out the whole of the river below, and it had a very good effect.

29,491. (*Chairman.*) As I understand you, the companies might have hauled you up for that and complained?—They might. We gave them notice before that we were going to do it.

(*Chairman.*) It is a ludicrous system.

(*Mr. Pember.*) It would seem that if there were no companies at all, they could not utilise this water to fill the Limehouse Cut.

(*Chairman.*) No, not if there were no companies at all; but if the companies took nothing, and the present system continued, you could not get down water enough by reason of your being restricted to lock by lock discharge; you could not get down water enough to make Limehouse Cut navigable.

(*Lord Robert Cecil.*) May I suggest that it would be useful if Mr. Corble would draw the attention of the Commissioners to the section of the Act of Parliament, which he says imposes that obligation upon the Conservancy Board, because I have not been able to find it.

(*Witness.*) It is in the Act of 1855.

(*Mr. Pember.*) The first section is section 11.

(*Lord Robert Cecil.*) Perhaps your Lordship will read sections 11, 14, and 17.

(*Witness.*) It is section 14.

(*Lord Robert Cecil.*) If section 14 is the one you rely upon, I should like very much that the Commission should read it.

29,492. (*Sir John Dorington.*) You have all the water of the Lea at Bromley lock, have you not—I mean to say except what is taken by the companies; the River Lea does not run away anywhere else?—Nowhere else.

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29,493. It all comes to Bromley lock?—Some of it goes over Lea Bridge weir at the far left-hand corner of that map.

29,494. Where does that go to?—That goes round a back stream, and through those arms of the river, and out into the Bow Creek without passing through Bromley lock.

29,495. It comes back again, then, close to Bromley lock?—Close to it.

29,496. (*Major-General Scott.*) If you had the whole flow of the Lea at your disposal, there would be no difficulty in making arrangements for putting any quantity of water you like into the Limehouse Cut, would there?—By making some special arrangements.

(*Mr. Pember.*) How would that carry on the navigation?

29,497. (*Chairman.*) You could not, of course, let the water come down by lifting up all the sluices if there were any barge in the navigation at the time. If there was a barge in, you must let it go by?—Yes.

29,498. But suppose there was no barge in the upper reaches, you could lift your sluices and let any quantity of water come down the Limehouse Cut?—We could, but it would take some considerable time for it to get from Hertford down to Limehouse. We know when the neap tides are coming, of course; but they do not always flow the same. They may be two feet under head to what they were yesterday. Supposing the neap tide has just flowed at Limehouse, and we find it two feet under head, we could not within two hours send the water down from Hertford, because if we sent the water down from one pool, we must keep up a ladder of pools up to the far end of it.

29,499. The result of your evidence seems to me to be that Limehouse Cut is suffering from an incurable disease—

(*Mr. Pember.*) Yes, quite so.

(*Witness.*) It is so.

29,500. (*Chairman.*) By no contrivance, if you wiped out both the water companies and the statute and everything, could you get Limehouse Cut into a navigable condition?—Our remedy would be to have strong pumps and to pump, as the Regent's Canal do, direct from the Thames.

29,501. (*Mr. Pember.*) Pump back?—Pump back. And the East London Water Company have been doing that to a certain extent, during this last summer to assist us.

29,502. (*Chairman.*) It is an extraordinary state of things. Do you really endorse that view, that if the water companies were wiped out of existence, and took no water from the Lea, you could not get water down the Lea fast enough to feed Limehouse Cut, and make it navigable at these neap tides?—Not at every neap tide. Of course, with no control of the companies, we could during a few hours—perhaps it would be expedient to stop the traffic and send a certain quantity right away down or from a few ponds above, and then telegraph up and get them to send it down from Hertford to fill up those ponds.

29,503. That is, you could only fill Limehouse Cut at the expense of the ponds above?—Quite so, unless we pumped from the Thames.

29,504. (*Major-General Scott.*) What is the difference of level between the Lea at Bromley lock and Limehouse Reach when it is full?—There is a common level; that is one level.

29,505. What is the difference in level between the Lea where it parts at the red line upon the map at Bromley lock and the water at Limehouse Cut?—That depends upon the tide.

29,506. When it is full?—When it is full, the yellow, which is Bow Creek, and all the red up to Old Ford, is one common level with the Thames. Directly the tide turns the tide gates shut there, and the water is bottled up in Limehouse Cut as far as Old Ford, and then Bow Creek is practically empty. But for the mud you could almost walk across it at very low neap tides.

29,507. (*Chairman.*) How much does the navigation take per diem?—To work the traffic there?

29,508. Yes?—We put it at about 1,800,000 gallons, but it comes to something less than that. It varies according to the trade.

29,509. That is a long way below what you are entitled to?—Quite so.

29,510. How much, practically, last year, or in years like that year, has come down for the navigation? Has it been 1,800,000 gallons or 5,400,000 gallons?—The average per day per week has been 1,261,370 gallons.

29,511. That has come down for the navigation?—That has been wanted to pass the barges.

29,512. But is that what has actually come down?—Yes.

29,513. Is not that why Limehouse Cut has been so impoverished?—There have been times during the last autumn when we passed extra quantities down to help Limehouse Cut.

29,514. I mean, if you had insisted upon your full 5,400,000 gallons coming down every day, would Limehouse Cut ever have been in distress?—If it had been practicable to pass the balance out of the 5,400,000 gallons, there is no doubt it would have helped, but in exceptional neap tides it would not have filled the Cut up to its head level. We have statistics, and I can give your Lordship the figures showing the quantities of water that have been passed down. Principally it has been passed down over Lea Bridge weir to assist the flushing of the back streams.

29,515. Yes; but what I am asking you is, supposing your full 5,400,000 gallons had every day been allowed to pass down the Lea by the water companies, would there have been any distress in Limehouse Cut?—If we could have got that in 24 hours in Limehouse Cut, I do not think the navigation would have been incommoded.

29,516. But you would have got it in 24 hours if you had insisted upon your full quantity every day—

(*Sir John Dorington.*) No, I think not.

(*Witness.*) But then we must keep the account lockfull by lockfull, according to that 14th section.

29,517. (*Chairman.*) Can you get 5,400,000 gallons down the river lockfull by lockfull?—Not in the time.

(*Mr. Littler.*) Not in 24 hours.

(*Chairman.*) Then the Act of Parliament is an absurdity. The Act of Parliament says you are entitled to 5,400,000 gallons for the navigation.

(*Lord Robert Cecil.*) It says they are to be measured in any way they like. There is no pretence for saying it must be measured by lockfull. If you look at section 14, your Lordship will see it is only where both parties approve that it is to go on.

(*Chairman.*) It says distinctly, "In order to prevent differences as to those three daily quantities respectively, they shall from time to time be measured and estimated by the lockfull of water from time to time used in the navigation."

(*Lord Robert Cecil.*) Yes; but will your Lordship read on?

29,518. (*Chairman.*) Do you mean to say that you could not pass down 5,400,000 gallons a day through the locks and by lockfull?—We have done it nearly up to that. Except at exceptional times we have done so.

29,519. Why could not you do it every day?—Because it would so interfere with the navigation, and, of course, at other times we have not got it to pass.

29,520. That is another matter. You have not got it to pass because the companies have taken it, but I am supposing you insist upon having it as you are entitled to do.

(*Mr. Pember.*) If you make him explain his answer, it would be that it would interfere with the navigation.

29,521. (*Chairman.*) You said you had done it on some days?—Nearly up to the maximum.

29,522. And without interfering with the navigation?—It has interfered; we have had to stop for some hours while it has been passed over Pickett's Lock. We have had special men to see that the lock was properly filled, and that it is passed on down below.

29,523. I am lost. Do I understand you to say that you can, or that you cannot, pass down 5,400,000 gallons a day upon the lock system by lockfull consistently with the navigation going on?—I did not quite catch the question.

29,524. Never mind any difficulties about shortness of water. Supposing the water is there, can you, or

can you not, pass down the river, by locksfull, 5,400,000 gallons a day without interfering with the navigation of the Lea?—We could get to nearly that.

29,525. Then why did you not in 1898 when your Limehouse Cut was in distress?—Because we passed at times, and I can give you the figures, certain quantities down, but they would not be sufficient to make up the head of Limehouse Cut.

29,526. But why did not you pass down the full 5,400,000 gallons?—Because after the water gets to a certain height it goes over the side of the weir, and it goes absolutely to waste into the Thames.

(Mr. Pember.) It goes into the old river.

29,527. (Chairman.) But you told me you could get down your full quantity of 5,400,000 gallons by locksfull?—Then you must keep on looking at Limehouse Cut, and if we continued to send it to make up the full quantity, you could not bottle it all up in the Cut. It is bound to go over the Three Mills overshot first.

29,528. But your cut would be full at first?—That would be full for the moment.

29,529. But the moment it had ceased to be full it would fill again?—Yes, but then we could not fill it from above. If we had passed that in one day, we should have been denuded, taking into account the short water season. Your Lordship says, Why did we not do it every day to keep up the Limehouse Cut? Taking all the circumstances into consideration, if we had done that one day, and had lowered the pool above Old Ford to Tottenham, which is four miles in length, by a foot of water, it might have taken a week to fill all that up, and we should have had all the trade stopped.

29,530. (Mr. De Bock Porter.) That is because the companies had taken the water?—And the drought.

(Chairman.) Supposing the companies had not taken any water at all, the river would have given you 5,400,000 gallons a day.

(Lord Robert Cecil.) Certainly.

(Witness.) We were obliged to consider that the East London Company had to take their quantity.

(Chairman.) That is it.

29,531. (Mr. Mellor.) As I understand it, the lockfull is only a measure of the quantity of water?—A measure.

29,532. If you do not like that measure you can, by agreement or by arbitration, get some other mode of measuring the water?—Yes, the Act provides for that, but we have not adopted any other mode.

29,533. Have you tried any other mode?—No.

29,534. (Mr. De Bock Porter.) It would be true to say, would it not, that the navigation of the Lea is very much hampered by the draught made upon it by the water companies?—You cannot disguise the fact that it does, to a certain extent, have an effect upon the navigation.

29,535. (Mr. Mellor.) To a considerable extent, does it not?—Yes.

29,536. (Mr. De Bock Porter.) The relations between the Conservancy and the waterworks companies appear to be very friendly?—No; we stick to our rights, and they stick to theirs.

29,537. (Chairman.) But you do not stick to your rights. You abandon your rights?—Up to a certain point.

29,538. Instead of taking 5,400,000 gallons a day, you only take 1,500,000 gallons?—We have to consider this, they have the rights.

29,539. They have got rights subsequent to yours. You have the right to your 5,400,000 gallons first?—And they pay us water rents, which is a large item in our income.

(Chairman.) That is the rub, is it?

(Mr. De Bock Porter.) That is where the voluntary contribution comes in, is it not.

29,540. (Chairman.) I suppose the voluntary contribution would stop if you insisted upon your rights?—That would rest with the companies. Then again, my Lord, we have to consider this, that taking this exceptional drought, when we knew that the East of London was crying out for water, that we should have passed a lot of water down that ought to have gone to the East

London Company, and if we had passed that down, it would have gone over Lea Bridge Weir into the Thames.

(Mr. Pember.) That is where it is.

(Witness.) In fact, our Conservancy considered it would have been absolutely criminal if they had done such a thing.

29,541. (Chairman.) Your Conservancy, being a body appointed to look after the navigation of the River Lea, sacrificed your interest deliberately to that of the water consumers of East London?—We cannot overlook the Act of 1855.

29,542. The Act of 1855 entitles you to 5,400,000 gallons a day, which you did not insist upon?—Yes, and entitles the water companies to take so much.

29,543. No, not so. That is after you have got your 5,400,000 gallons?—That is a question of policy, to a certain extent. We felt this, that rather than hamper the East London Company, say, for once, by passing the fullest quantity down, we had better have a few barges grounded in Limehouse Cut for an hour or two.

29,544. You did, therefore, sacrifice the navigation of the River Lea for the interests of the water companies last year?—We did not consider that we had sacrificed their interest.

29,545. You prejudiced their interest?—We tried to keep the traffic going in a fair and reasonable way without denuding the water companies of a certain amount of valuable water that they required.

29,546. (Mr. De Bock Porter.) Are the water companies very largely represented on your board?—Four out of 13.

(Mr. Pember.) There is one definition which the witness has not given which, I think, would help the Commission to understand this matter. He has not defined what he means by "head." He is constantly saying that the water is below head in Limehouse Cut, and so on, and if he explains what he means by head I think it would help you.

29,547. (Chairman.) You hear that?—The head is the level fixed at the Three Mills Weir.

29,548. (Mr. Mellor.) What is the weir that you spoke of just now, when you said that if you passed the water down it would have gone over that weir?—The Three Mills Weir.

29,549. Why could not you raise the Three Mills Weir?—The miller would not let us raise it. He is the owner of the Three Mills, and in addition to that if we had raised that three feet the barges could not get under Bow Bridge, which is a very old-fashioned bridge.

29,550. (Chairman.) This Lea navigation seems to be in a very curious condition?—It is in a very peculiar condition in that part of the river, and there are very few people who can understand the tidal ways there.

29,551. (Mr. Lewis.) Could not you disestablish the miller?—It is a question of buying him out, and I am afraid it would require a very large sum.

29,552. (Mr. Littler.) It would be a very big business be disestablish him—it would be a very costly thing?—They would have to rebuild Bow Bridge.

29,553. (Chairman.) What is Bow Bridge, does a road go over it?—It is the main road to Stratford. It is a solid thing, and we are in negotiation with the London County Council and other bodies, and we hope the day is not far distant when they may rebuild Bow Bridge.

29,554. (Sir John Dorington.) That is in the Mile End Road, is it not?—At the end of the Mile End Road.

29,555. (Chairman.) If I can get hold of anything clear in this explanation, it is that if you disregarded the interests of the water companies altogether you could keep up a sufficient head of water in Limehouse Cut for the navigation at all times?—We could keep it up to a better head, but it would play us tricks in every neap tide. We have passed a great deal of water down during this last autumn into Limehouse Cut.

29,556. You had recourse to the expedient of pumping water, I believe, last year?—That was so.

29,557. Where did the pumping take place?—The East London Company fixed a pump two years ago at Bow, and it pumps the water out of Bow Creek.

29,558. Out of Bow Creek—where is that?—That is the yellow line on the map.

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29,559. That is the old channel of the Lea?—Quite so.

29,560. That being pumped into the pond between Limehouse and Old Ford?—Yes.

29,561. Old Ford being at the top of the red?—Yes.

29,562. (Mr. Mellor.) Is that old channel of the Lea full when the tide is up?—Quite—on a level with the Thames.

29,563. There is no lock between, I mean?—No. All that district is on a common level with the Thames up to what we call the top of the tide.

29,564. (Chairman.) Only when it happens to be a very low neap tide that level is not sufficient for the navigation?—That is so.

29,565. Then I thought you said that that Bow Creek was practically dry when the tide was down?—When the tide drops.

29,566. When did the pumping take place, I mean, you said that the East London pumped from that Bow Creek into the Limehouse Cut?—At that point.

29,567. They could only pump when the tide was high?—Only at certain states of the tide, but if (and they have promised to consider it) they put a pump at Limehouse Lock, arrangements could be made so that they would be able then to pump in all states of the tide.

29,568. To pump direct from the Thames into the Limehouse Cut?—Quite so.

29,569. Did they pump anywhere else?—They had temporary pumps going up by steps from Old Ford into the pond above that, and then from the Old Ford pond into the pond above Tottenham, and from there above Stone Bridge, and into the pond above Stone Bridge Lock, and there they stop, because the pond beyond that is the pond from which they take their supply, but none of the water that they pump up could possibly affect the pond from which the East London draw their water.

29,570. Where do they get that water from in the upper reaches—where do they pump it from?—It runs down over a weir at Ponder's End, the intake of the East London Company.

29,571. But you say that they pump into these upper reaches. Where do they get the water from to pump into these upper reaches?—They fill it by steps from the Bow Creek.

(Mr. Pope.) From pump to pump—into one pond and then from that pond into another.

29,572. (Chairman.) It pumps from pond to pond?—Yes.

29,573. (Sir John Dorington.) A series of pumps?—Yes. They are all temporary, except the one at Bow Lock, and that is a permanent pump.

29,574. (Mr. De Bock Porter.) Was there no understanding between the Conservancy and the companies, that if they did this pumping for you, you would not interfere with their having all the water they could get?—No. There was no understanding at all.

29,575. Then what moved them to pump this water up?—They might have anticipated that if they did not we might have lowered some of the ponds above.

29,576. (Chairman.) What would that matter to them?—That would affect their supply.

29,577. (Mr. Mellor.) Disregarding the navigation, there is plenty of water for the water companies, is there not?—Of course, putting an exceptional year like last year out of the question, there is plenty of water.

29,578. But what was the condition of things last year, disregarding the navigation? Supposing you had not got to find water for the navigation at all, what would have been the condition of things last year with regard to the water companies?—The Commission have the gaugings, I believe, and it can be seen from them whether there is enough.

29,579. (Chairman.) On the average there would not have been a drop left in the Lea last year. There were only 22½ million gallons on the mean per day over and above what the New River Company took, and therefore the East London would have taken every drop of the Lea?—Last year.

29,580. And on some days I do not know what would have happened. There was only three-quarters of a million gallons going over?—That was so.

(Chairman.) This is a most serious thing.

29,581. (Sir John Dorington.) I suppose the gates at Limehouse Cut are self-acting, so that they open when the tide rises?—They are bound to act when the tide rises.

29,582. I say they are self-acting?—They open upwards, of course, and the same at Bow too. You may say the tide comes in at both ends and meets about the centre of Limehouse Cut.

29,583. (Chairman.) In fact the position of things is this. You go without the water that you want, in order that the water companies may be able to supply their consumers, and the water companies pump, to oblige you, water from pond to pond, up this navigation, so as just to enable your barges to scrape through?—Yes.

29,584. And the whole thing is lubricated by a payment of 1,100l. a year from the water companies to you?—I do not put it in that way.

29,585. Do not you? Well you can put it in your own way, but that is how it strikes me at present. You abstain from taking what you are entitled to, you tell me, out of consideration for the water consumers?—We consider that we ought to consider them.

29,586. Your views of duty I daresay are quite right. I only want to get at the fact. You do abstain from taking what you are entitled to, out of consideration for the water consumers?—Yes.

29,587. On the other hand, the water companies, taking what belongs to the navigation, obligingly pump the water from pond to pond in order to prevent it stopping altogether—

(Mr. Pember.) Of course your Lordship knows that is provided for by statute.

(Chairman.) No, not the pumping.

(Mr. Pember.) Yes.

(Chairman.) This pumping is purely voluntary.

(Mr. Pember.) This is section 31 of the Act of 1855. "The two companies may from time to time, if they think fit, subject to the provisions of this Act, furnish to the trustees all or any part of the quantities reserved to them by pumping water, at the expense of the two companies, from any one pond of the navigation to any other pond thereof, so as they do not thereby reduce the level of any such pond below the customary head level from time to time thereof."

(Chairman.) But they do reduce the level.

(Mr. Pember.) Not by pumping.

(Mr. Mellor.) They do reduce the level if they think fit.

(Mr. Pember.) The two companies may—of course, if I am empowered to do a thing by Act of Parliament it is only when I think fit. If I am entitled to a dinner a day I am not obliged to eat it. Recollect it is put in for the benefit of the companies, and they alone have the power to do it.

29,588. (Chairman.) Do you mean to say that the level of this pond, from which the pumping takes place, was not reduced below the customary head level?—Very little.

29,589. But whether it was little or very much, it was reduced beyond the customary head level?—Excluding Limehouse Cut, we pumped up. We did not pump down.

29,590. I know you pumped from one pond to another, and you reduced the level in the first pond below its customary head level?—No, they pumped from the tidal way into the first pond there.

(Mr. Pember.) Excuse me, my Lord, it would not be so.

(Chairman.) He says it is, Mr. Pember.

(Mr. Pember.) No, because he did not quite understand it.

29,591. (Chairman.) Then let me, please, deal with him, I prefer that. Do you, or do you not, say that when pumping takes place from one pond to another the customary head level in the first pond is not reduced?—No.

29,592. Just now you said it was, only a little?—A little at times.

29,593. But was it reduced a little?—At times, but we keep the pond above Old Ford Lock, that long

pond of four miles, very often above the head to help us in such an emergency there, so that by pumping from that pond above we do not lower that.

29,594. But I should like to get a definite statement from you, if I can, on a very clear point?—I hope I can give it to you.

29,595. Aye or no, was the customary head level of the pond from which the companies pump reduced—

(*Mr. Pember.*) Below head level.

29,596. (*Chairman.*) Was the customary head level reduced?—Not when they were pumping, because they kept it up.

29,597. No, not the pond from which they pumped—that could not keep up the level. It reduced it, you know?—They commenced to pump, in the first instance, from the tidal water, as I have said. They pumped, say, a foot into the next pond, and that foot is only carried up from pond to pond.

59,598. (*Mr. De Bock Porter.*) Does the pumping go on simultaneously then?—Yes, they have got these pumps, and they are working the whole day.

(*Mr. Pember.*) As fast as it is pumped out it is pumped in again, and inasmuch as the lowest part is tidal level, it is obvious that if they do not pump faster into the upper reaches than into the lower there is no reduction, and that is a fact. Of course if we had known you were going to investigate the circumstances of the River Lea, we should have asked Mr. Bryan these questions. He knows how it is done.

(*Chairman.*) But we have the Conservancy.

(*Witness.*) I should say this only occurs in two or three months of the year. In nine months there is enough in the Lea for the water companies and to allow millions and millions of gallons to go out into the Thames.

(*Mr. Pember.*) We should have had plans and sections as to this, for it is almost impossible to understand this without plans and sections.

29,599. (*Chairman.*) Did the East London Company have recourse to other sources in order to supply water to the Lea?—They did.

29,600. Where to?—They were enabled to take water, or we took it for them, of course, and they paid for it, from the Regent's Canal Company down to Duckett's Canal. You will see it on the smaller map just above Old Ford Lock. There is a communication between Regents Canal and the Duckett into that pond that goes from Old Ford to Tottenham, and I can give you the days and the number of locks of water that were passed through Duckett's Canal. On the average of seven days in October and November, they passed 50 locks of water.

29,601. What does that mean in gallons?—19½ million gallons.

29,602. (*Mr. Mellor.*) Is that to supply the Regent's Canal?—To supply that pond of ours above Old Ford Lock. Regent's Canal is the higher level.

29,603. (*Mr. De Bock Porter.*) Then you bought the water from the Regent's Canal Company?—Yes, but the East London Company paid for it.

29,604. (*Chairman.*) That was during September and October of last year, was it?—That was during two days in October, and five days in November.

29,605. 19½ million gallons a day? No. Taking the total, the total would be 350 locks during those seven days, and that works out at 19½ million gallons.

29,606. Something between two and three million gallons a day.

(*Mr. Pember.*) 2,570,000.

29,607. (*Chairman.*) But for that, Limehouse Cut would have been in a still worse condition, I suppose. Then it does come to this, that in order to get the present supply from the Lea, and to satisfy the navigation, you are obliged to buy water from the Regent's Canal, and to pump up water from the Thames?—Yes.

29,608. Otherwise you would break down altogether?—We should be stopped in the lower end of the river.

29,609. And, as I understand, in some of the upper ponds, too. You have to pump from pond to pond?—Up to about seven or eight miles.

29,610. Have these arrangements—I do not know what word to use—ever taken place, except last year?

—About two years ago, they began starting the pump at Bow.

29,611. (*Mr. De Bock Porter.*) Did you pump there in 1893?—I cannot quite remember, I think it was only about two, or it may be three years ago.

29,612. But it was not done last year for the first time?—No.

29,613. (*Chairman.*) Have you made arrangements, or are there arrangements being made, to get a permanent supply of water from the Regent's Canal?—The Conservancy Board are asking the companies to make that voluntary help that they are giving now of a permanent character, either by way of agreement or something of that kind.

29,614. But that has not been done yet?—It has not been done yet.

29,615. Are you calling upon them to add pumps?—To solve the difficulty of the Limehouse Cut, once and for all, would be (and we are pointing that out to the company), to put a permanent pump at Limehouse Cut, if we could get the premises and the acquiescence of the Thames Conservancy. Always at neap tides we could pump immediately without any waiting to pass water down from the reaches above the Cut. We could pump immediately into the Cut, and there is no time lost.

29,616. (*Mr. Pope.*) And maintain the head in the Cut?—Yes.

29,617. (*Mr. Lewis.*) Would that solve all your difficulties?—As regards Limehouse Cut, and I may say, we have had no difficulties above that reach.

29,618. (*Chairman.*) I was just going to ask that?—We have had no difficulties above that reach not all this exceptional summer. It is wonderful how we have kept up the navigation head considering that the companies had to have their draw as well.

(*Mr. De Bock Porter.*) They were not obliged to take their draw.

29,619. (*Chairman.*) That is the confusion of mind under which you are labouring, if you will allow me to say so. You are entitled to keep up the navigation, and then the companies can have their draws if they can?—Quite so, but as I say we had to consider their interests. They pay us a certain amount, and the Board have said many times, shall we starve the East of London or keep the barges afloat? It places us in that dilemma.

(*Mr. De Bock Porter.*) You ought to have been paid very handsomely for your assistance.

29,620. (*Chairman.*) I suppose the barges are not quite so vocal as the East London consumers?—They are at times when they are stopped.

29,621. Is there a weir being added at Old Ford lock?—They have added a weir at Old Ford lock.

29,622. What is the effect of that?—The effect of that is that when the level of the water is in a certain condition, instead of going over Lea Bridge weir and down the back streams into the Thames it shall flow naturally over this fixed overshot down into Limehouse Cut to assist them there.

29,623. That is all one pond, is it; all the red?—The red is one pond.

29,624. It is one pond from the Thames up to Old Ford, is it?—Yes, up to Old Ford. The company do that. At Lea Bridge they have old millers' rights. They have abolished the mill power, and have a turbine instead. They have said that instead of passing the water always through this turbine they will let it come over this overshot to help us in the reach below.

29,625. In Limehouse Cut?—Yes.

29,626. (*Mr. De Bock Porter.*) Have you sufficient funds at your disposal to deal with the pollution in the upper reaches of the river?—We have 1,000l. a year, that is all; and that is not sufficient for very expensive law-suits, or to pay a very large staff.

29,627. So that the inspection is not very satisfactory?—We consider that the condition of the river, as proved by analysis, is, by our own exertions through our sanitary officer, very satisfactory. The results of analyses prove it. We had four examples of this as a test during the excessive drought. We had, I think it was about October, four special samples taken of the river at different points, and they turned out very satisfactory.

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29,628. (*Chairman.*) There was some complaint, was not there, with regard to the streams about Stratford?—We had a great many complaints this last autumn.

29,629. Whereabouts is that; just point that out on the map?—There are four or five arms there; very old mill streams.

29,630. They are not on this small map?—They will be shown on that map before your Lordship, but not coloured probably.

29,631. These streams about Stratford were said to be a nuisance, were they not?—They were.

29,632. Were they?—Undoubtedly.

29,633. How are those streams flushed, if at all?—From water that had come from Lea Bridge weir.

29,634. That is the water that this new weir is to stop?—It will not stop at the weir; but it will send the water down below it when the water is at a certain level there instead of going over there.

29,635. Exactly, and it will keep the water from going into those streams that were alleged to be a nuisance last year?—At certain times.

29,636. At the times when the water is most wanted?—Just at that time there was none going over Lea Bridge weir, or over the other weir at all.

29,637. I cannot get you to admit anything. You say those streams were a nuisance?—Undoubtedly.

29,638. To what was that due?—Due to no water coming down from the weir, and to the effluent from Walthamstow, shown at the very top of the map, or from the sewage farm there, from the effluent at Leyton coming into these streams, coming lower down to the West Ham sewage, which goes into Bow Creek, likewise the London County Council's storm outfall at Bow.

29,639. How does that ever get into these other streams beyond?—When the tide is on the level they all mix. All over that district, as I say, is one common level there.

29,640. Do you mean the London County Council sewage finds its way, as it were, across the Lea into these outside streams?—It does so. There are certain tide-gates at Old Ford, and all these back streams—the red line, the yellow line, and the Thames, all mix on a common level at certain states of the tide there.

29,641. (*Major-General Scott.*) You said the effluent from Walthamstow?—Yes.

29,642. It does not say much for the effluent from Walthamstow?—We have served them with notices under our Act. Leyton has been applying for an injunction against them, and they are under an order of the Chancery Division of the High Court.

29,643. (*Chairman.*) An order of what sort?—A sequestration order.

29,644. (*Mr. Pember.*) Because they would not do what they were told?—That is so. Then there is the condition of the Thames water, which varies as it comes up with the tide, and it affects these back streams up to a certain point.

29,645. (*Chairman.*) Have you got a West Ham effluent as well?—All the effluent from West Ham, with a population of from 250,000 to 300,000, comes into Bow Creek at that point. The West Ham Corporation say they do not pollute, but we are of a different opinion.

29,646. (*Major-General Scott.*) How do they treat their sewage?—It is treated in tanks by some process of putting in a certain black ash waste, I believe.

29,647. No land?—No land, but the whole of the West Ham sewage within the next two years will be joined to the metropolitan system, and we shall be free of that.

29,648. (*Chairman.*) Then all this importation of sewage obliged you to dredge?—At times there is no doubt it keeps a lot of mud and matter in suspension which settles in the river, and we are put to a great deal of extra expense in dredging.

29,649. Where is it that you dredge?—Our principal cost is in the Limehouse Cut, but for the reason, as I said, that the tide coming in at both ends meets in the centre, and there is no flush right through.

29,650. How often do you dredge?—Every two or three years there.

29,651. What does it cost you?—We have spent, perhaps, 1,000*l.* in the last three months in dredging. We have taken out about 10,000 tons of mud alone in three months.

29,652. Who pays for that?—Further up we have to dredge below the London County Council outfall, every three or four years at a cost of 300*l.* or 400*l.*, and that the London County Council have hitherto paid. They objected to pay for some reason last year, and we are coming to some compromise with them about it.

29,653. They objected last year; did they say why?—They have paid it ever since 1864.

29,654. But did they say, why?—Yes; because they are getting scientific evidence, and expert evidence, to say there is nothing but storm water that comes out at those places, but we know better than that. It is stinking sewage, and anyone can see it.

29,655. This Limehouse Cut seems to be an eligible place for residence, the London County Council on one side, and West Ham and Stratford on the other; in fact, make your life a burden to you?—It is the worst part of the river we have to deal with.

29,656. Then, are the East London Company doing anything by their Bill of this year to remedy these difficulties?—Their engineer has calculated that, if he has power to make these new large reservoirs, he will construct them of such a capacity that, at times, if we are hard up, they will be able to pass us down a large quantity of water out of the reservoir, really making it almost partly a compensation reservoir.

29,657. On the other hand, if you chose to insist upon your legal rights, and to take your 5,400,000 gallons a day, you would not need any compensation, or any help, or anything else?—There is no doubt about that.

29,658. Practically this year the Lea was exhausted?—I will not use the word "exhausted." We were hard up—I confess that.

29,659. Hard up! The gauging of the Lea after the New River had taken its total was 22½ million gallons?—Yes.

29,660. That is what the East London Company took?—Yes.

29,661. So that what was left looks to me very much like 000?—After the companies had taken their water.

29,662. Then the navigation only got 1½ million gallons instead of 5,400,000?—Yes.

29,663. That looks very much like an exhaustion of the Lea?—But there is one point I have not touched upon before, which should be explained. Feilde's weir should not be taken as showing the absolute quantity coming down the Lea.

29,664. Why not?—Below there are undoubtedly very huge springs in the old bed of the Lea. There are other affluents joining it, such as the River Lynch, where there is one of the best springs in the county, it comes in below Feilde's weir; and that spring alone has been calculated to supply from 2 millions to 3 million gallons a day; and that was anything but dry this summer time. There was a good flow of water down it, and it is full of watercress beds. Then there are other springs, Cobbins brook and Stone Bridge brook, and several other streams that bring in water that does not enter into the Feilde's weir gaugings at all.

29,665. Have you got any gauging of the total flow of water?—Nothing below Feilde's weir, and that makes it a bit intricate and difficult to understand; because the figures do not include anything that comes into the Lea below Feilde's weir.

29,666. (*Major-General Scott.*) What do you think was the flow below Feilde's weir in a year like 1898?—I have no means of gauging or testing that. It must have been several million gallons.

29,667. (*Mr. De Bock Porter.*) But the flow below was not sufficient for the navigation without this assistance by pumping?—No.

(*Mr. De Bock Porter.*) Then it could not have been very much.

29,668. (*Chairman.*) It cannot even have levelled the amount for the navigation up to your statutory 5,400,000 gallons, because you say that would have been enough if you had got that always?—Quite.

29,669. Therefore these extra supplies, whatever they were, cannot have been enough to produce even that result?—No, some of them were running very dry or very low.

29,670. I suppose I must ask you what your opinion is as to the future. Supposing you can get rid of these amiable contributions of Stratford, Leyton, the London County Council, West Ham, and other people in an average year, do you think that the Lea can rub on?—I think so, decidedly. We have had a cycle now of about 10 years of dry seasons, and we may have a cycle of wet ones again. In ordinary seasons there is enough for over 50 million gallons for the water companies, and enough to supply us too.

29,671. However, I suppose you would not say that anything beyond the present take of these companies could be got from the Lea?—Not looking at past figures, but, of course, I do not speak as an expert at all.

29,672. You are the clerk to the board, I understand?—Yes.

29,673. You are appointed, of course, by the whole board?—That is so.

29,674. And I take it you represent the views of the board here?—Yes.

29,675. You are authorised by them to represent them?—Yes.

Re-examined by Mr. PEMBER.

29,676. Supposing you keep up the water to the point which you call head at Limehouse Cut, would that be sufficient for your navigation?—Yes.

29,677. Would that take the whole or anything like the whole of the 5,400,000 gallons?—Not at all times.

29,678. It is only when there is this extraordinary neap tide that you would want all that?—That is so.

29,679. Supposing that you could get rid, for the moment, of the water companies, could you send down the 5,400,000 gallons if you had got it in the Lea with that regularity which would keep up the Limehouse Cut to the required height?—We should not always want it.

29,680. No, I did not ask that, but could you do it without interfering with your navigation?—No.

29,681. You could not?—No.

29,682. In fact, you have got a canalised river to deal with which has got a certain number of locks on it?—Quite so.

29,683. And you cannot tell, of course, where there is going to be a barge that will want to go up, and you must have water in your locks for that barge?—That is so.

29,684. Therefore you cannot throw open your navigation and treat it as if it was a running stream?—Certainly not.

29,685. (Chairman.) As I understand you, you could not pass down the 5,400,000 gallons in the 24 hours without interfering with the navigation?—Just so.

(Chairman.) Then the Act of Parliament is ludicrous, it is based on a mistake.

(Mr. Pember.) That is only a maximum. They are entitled to ask for that, if they like.

(Chairman.) They are entitled to ask for that which they cannot use.

(Mr. Pember.) I know.

(Witness.) But it gives us a maximum in case we want it.

(Chairman.) But if you wanted it you could not use it, you tell me.

(Mr. Pember.) Not without interfering with the navigation; but, however, it would not be the first absurd Act of Parliament that has been passed.

(Chairman.) No, by no means.

(Mr. Pember.) Would you mind me calling your attention to section 11, which I do not think you have had your attention called to altogether. It throws a certain light upon section 14. Section 14, which you have read, if you recollect, is to the effect that locks-full should be the measure of water, unless the trustees or the company agree upon some other measure, or have settled for them by an arbitrator, in default of agreement, some other mode of measurement. But

will you kindly look at section 11? There you will see that the substantive power of the trustees to take water at all is to pass it through the present and future locks of the navigation.

(Chairman.) Yes.

(Mr. Pember.) Then, also I want just to call your attention to this, that by clause 5 of the Act you will see that the companies paid pretty heavily for any privileges they got under this Act of Parliament. The two companies are to pay 3,500*l.* a year, and the New River Company is to pay to the trustees the gross sum of 42,000*l.*

(Chairman.) Yes.

29,686. (Mr. Pember.) I will ask the witness that question. (To the witness.) Where would you be so far as regards making the two ends of the accounts of your navigation meet, if you did not get these payments from the water companies, and if you had not got the interest on that 42,000*l.*?—We could not pay the interest on our debenture stock.

(Mr. Pember.) I do not know whether you have had the constitution of the Lea Conservancy Board referred to, my Lord. We may as well have it.

(Chairman.) Yes, we have had it many times, I think. However, as to the Lea Conservancy Board, I do not want to say anything against their integrity or their impartiality, but it is obvious that they are dependent upon these water companies.

(Mr. Pember.) Quite so.

(Chairman.) They could not live without them.

(Mr. Pope.) If the water companies did not pay they would shut up.

(Chairman.) Yes, that is so. You could not get on without the water companies.

29,687. (Mr. Pember.) There is one other question which I think I ought to have asked, and it is absolutely the last question. (To the witness.) Supposing that you did on some occasion pass down more water than was necessary to keep up the head of the river in the Limehouse Cut, would not that excess run to waste over the Lea Bridge weir?—It would.

29,688. Then there is no use in doing it?—No, no use at all.

29,689. It would be a great injury to the companies and the consumers, and it would do no good to you?—Quite so.

29,690. Now, as a matter of fact, I suppose incited thereto by somebody or other, your late chairman, Mr. Edward Rider Cook, did do that for some little time?—Once or twice we did it, two or three days for an experiment.

29,691. Did it do you any good?—Not much.

29,692. Did it do the companies any harm?—I believe so.

29,693. (Chairman.) That is rather a startling admission. It did you some good, did it?—It was passed down when the river level was in a certain condition, not when we were so short of water. The Board passed an order that, never mind what condition the levels were in, we were to take the statutory quantity, and we, the officers of the board, pointed out that it was not necessary every day, but they said, "Try the experiment, try your powers," we did it; the water went to waste over the Lea Bridge weir, and did us no good, but took it away from the companies.

29,694. (Mr. Pember.) When you say from the companies you mean from their consumers?—Yes.

29,695. (Chairman.) Why did not you let it down into poor famished Limehouse Cut?—They did not want it on those occasions.

(Mr. Pope.) It was not famished at this particular time.

29,696. (Mr. Pember.) Would not all that we have been talking about to-day for so long be very seriously modified for the better when the East London storage is all provided?—If they will give us out of the storage a certain quantity a day, except that, as I say, you never can remedy this exceptional neap tide business till you put a pump at Limehouse.

29,697. Then the exceptional neap tide business does not depend upon your relations with the companies or the companies relations with the river?—Not altogether.

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(Chairman.) It does to some extent, Mr. Pember.

(Mr. Pember.) Yes, to some extent, apparently.

(Witness.) You can help us with the storage reservoirs, but for the immediate remedy you must have the pump down at the low end there.

29,698. (Chairman.) The reason of that being, as far as I can make out, in this complicated story, that if a very low neap tide comes on, beyond your expectations, you cannot let water down fast enough from the upper ponds?—No, because the next tide turns again, and we are in the same condition.

(Mr. Pope.) Between tide and tide they cannot get the water down.

(Mr. Pember.) They have not got 24 hours to do it in. We keep on talking about 24 hours.

(Chairman.) No, but if you do always keep a full supply of upland water coming into the Limehouse Cut previous to the neap tide recurring, then the difficulty would not arise.

(Witness.) If that could be done, but from the peculiar circumstances of the district you cannot do it.

29,699. (Chairman.) The only peculiar circumstance that prevents you doing it is that the water companies take all the water and do not leave it to come down; is not that so?—There are other points about this tidal stream which I have tried to explain, and which I hope I have made clear.

29,700. (Major-General Scott.) Is there anything to prevent your constructing bye-passes from reach to reach?—That would help us from below Pickett's Lock considerably, and I do not doubt, if we asked the companies to do it, but that they would do it. It would not be an expensive thing at all.

29,701. Then you would be to some extent independent of the locks?—Below Pickett's Lock.

29,702. Where is Pickett's Lock?—Pickett's Lock is there (pointing on the map). We must lock it through there to catch it. From there down to Old Ford, if we had a side pass with three locks, it would flow, at certain conditions of the water, straight away down, without locking it through the intermediate locks, and we could save time by that.

(Mr. H. L. Cripps.) May I ask a few questions, my Lord?

(Chairman.) Certainly.

(Mr. H. L. Cripps.) I daresay your Lordship has noticed this section 31 which you have already been referring to, has reference to—

(Chairman.) I thought you were going to ask questions.

(Mr. H. L. Cripps.) Perhaps it may be unnecessary. Your Lordship will observe that that section has reference to pumping from any one point of the navigation to any other point, but it does not authorise this process of pumping out of the River Thames which the witness has referred to.

(Mr. Pope.) No. You mean at Limehouse.

(Mr. H. L. Cripps.) Yes.

(Mr. Pope.) No, it has no reference to that at all.

(Mr. Pember.) It does not make it illegal to pump from Limehouse Cut into the first pond, and when you have pumped from that into the first pond you may pump into any of the others.

(Chairman.) I do not know what right you have to be pumping away from the Thames.

(Mr. Pember.) You do not need to pump from anywhere else. You have got it from the Thames.

(Chairman.) Now your questions, please, Mr. Cripps.

Cross-examined by Mr. H. L. CRIPPS.

29,703. Your Board, of course, is a board for certain purposes which are recited by statute, and amongst other things for the repair of the river, for husbanding the water, and for preserving it from pollution?—That is so.

29,704. The districts at the mouth of the Lea are not altogether satisfied, are they, with the procedure of

the Lea Conservancy Board in that direction?—In what direction?

29,705. I will tell you. Of course, you know the London County Council have one member upon the Conservancy Board?—Quite so.

29,706. And they have more than once introduced Bills into Parliament with the object of obtaining a further representation for the districts upon the Conservancy Board?—Yes.

29,707. Those have been opposed by the Lea Conservancy Board, and they have not been passed?—Yes.

29,708. The West Ham Corporation again, introduced a Bill, I think, last year for the reconstitution of the Lea Conservancy Board?—Yes.

29,709. That again was discussed?—Not for the reconstitution. They asked to put one member on for themselves.

29,710. Very well, I call that a reconstitution or alteration of the Board. The London County Council has a Bill in Parliament again this year?—It has.

29,711. That is for an alteration of the Conservancy Board?—Yes, it is.

29,712. And I think the Lea Conservancy Board have at last felt the necessity of meeting the views of the public, and have arrived at some resolution with regard to this reconstitution of the Board?—I do not think I am in a position to refer to that. That is a matter that is *sub judice* just for the moment, and I think it would be unfair to ask me to give an answer to that.

(Mr. H. L. Cripps.) I do not know why it is unfair. The question is as to the dissatisfaction or otherwise of the districts with the existing condition of the Lea Conservancy Board.

(Mr. Pember.) But surely this is trying to manufacture evidence for that Bill before Parliament this session.

(Mr. H. L. Cripps.) If you tell me that you decline to state what the last resolution of the Lea Conservancy Board on the subject is, by all means do so. I do not know that I am entitled to press for it.

(Mr. Pember.) Then why do you ask a question you are not entitled to put?

(Witness.) May I say this; the London County Council have always had one member on the board, they tried to get another, they were defeated on that; they tried to get three, they are defeated on that, and this year they have come forward with a Bill to put six on.

(Chairman.) Then perhaps they will get the six?

(Witness.) The matter has been discussed by our Board, and was considered at great length yesterday. Something was done in the matter, but we have heard nothing from the County Council, and I do not think I ought to be asked questions at this stage about it.

29,713. (Mr. H. L. Cripps.) You have a special officer, a consulting sanitary engineer, who looks after the purification of the river, and sees that the companies do not take more water than they are entitled to?—His only duties are in regard to pollution.

29,714. That is Major Lamorock Flower?—Yes.

29,714a. Major Lamorock Flower was called as a witness for the East London Company, and do you recollect his making this statement before the Balfour Commission? The Chairman asked him, "Will you explain to the Commission why it is that you come to speak as a witness for the East London Company and not for the Conservancy?"—(A.) I am specially employed by the East London Company for the purpose of giving you any information you may wish to have with regard to pollutions of the river which might affect their water supply. (Q.) But does it not occur to you that your evidence would be more properly given as the officer of the Lea Conservancy?—(A.) I shall be very pleased to do what the Commission like, but I was specially retained by the East London Company for that purpose." Do you recollect that?—Yes.

(Mr. Pember.) That was to give the Commission any information they wanted about the river.

The witness withdrew.

[Adjourned to Monday next at 12 o'clock.]

FIFTY-NINTH DAY.

Monday, March 13th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

SIR JOHN EDWARD DORINGTON, Bart, M.P.
 SIR GEORGE BARCLAY BRUCE, Kt., C.E.
 ALFRED DE BOCK PORTER, C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
 HENRY WILLIAM CRIPPS, Esq., Q.C.
 ROBERT LEWIS, Esq.

CECIL OWEN, Secretary.

Mr. Balfour Browne, Q.C. and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
 Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
 Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

29,715. (Mr. Balfour Browne.) Before a witness is called may I refer to what took place at Question 24,566?

(Mr. H. W. Cripps.) Are you not going to deal with that in your speech?

(Mr. Balfour Browne.) Unfortunately I made a promise that it might be better before my friend spoke on the other side that I should add this; it is very short.

(Chairman.) I remember what it was.

(Mr. Balfour Browne.) What your Lordship said was this—you need refer to it—I will read it to you: “I confess I am not quite sure yet, although I have given great attention to the evidence, whether for example the London County Council desire us to find that purchase would be expedient on any terms, for instance of arbitration, or whether they want us to find that purchase would be expedient upon certain special terms of arbitration.” Referring to your observation, my Lord, upon that page, we have carefully considered this with the Committee of the London County Council who instruct us in this matter, and we considered the point so important that we have reduced to writing the answer which we desire to make in respect of the matter. I will read it, my Lord, as it is very short. “We would point out that the doubt which still seems to be entertained by some members of the Commission is no doubt due to the fact that throughout the present inquiry the object of the Committee has been not so much to make out a particular case which they ask the Commission to accept, as to lay before the Commission all the information relating to the water supply of the Metropolis which several years of experience have enabled them to collect, and upon which the Council’s policy has been based. In order to enable the Commission to appreciate this policy the Committee have laid before them the decisions arrived at by the Council, and the specific schemes for the solution of the water question which the Council has presented to Parliament. The Council’s Bill for the purchase of the eight Companies is now before Parliament, and it contains a special arbitration clause which is the clause that was discussed before Mr. Plunket’s Committee in 1895, and this clause affords in itself the answer to the Chairman’s question, namely, that in the opinion of the Council it is expedient to purchase the Companies upon special terms of arbitration. With

“regard to the question whether the Council think that purchase is expedient upon any terms of arbitration, we would point out with the greatest respect that as the Council’s definite proposal is now before Parliament, and the Council’s witnesses may at sometime be called upon to substantiate it before a Committee of the House of Commons, it is impossible for the Committee to say anything that might be construed so as to commit the Council to accept any terms of arbitration that might be imposed upon it. At the same time the Committee wish it to be stated that in their opinion it does not necessarily follow that the precise clause contained in the present Bill affords the only means of obtaining fair terms of arbitration. The Council’s view has been that the position of the Metropolitan Water Companies differs in many respects from that of similar undertakings with which Parliament has hitherto dealt, and its contention is that the fair value of the Companies’ undertakings should be ascertained by a Court of arbitration of the highest standing with the fullest powers to inquire into all the circumstances of each individual case.” We have had that written down in order that I might not put in a word more than I was authorised to state.

(Mr. H. W. Cripps.) I see you speak of it as being in your Bill, but of course that Bill is known to the other side.

(Mr. Balfour Browne.) Yes.

(Mr. H. W. Cripps.) Therefore, they have it before them.

(Mr. Balfour Browne.) The exact words.

(Mr. H. W. Cripps.) They know exactly what you have now told us.

(Mr. Balfour Browne.) Yes.

(Mr. Pope.) Before the Commission leaves the case of the Companies, they are very anxious that you should allow Mr. Hollams, who has investigated this matter very carefully, and who, in a few minutes, will give the result of his investigations to the Commission, to give a consecutive account of the proceedings of the Government and the Legislature in 1851 and 1852 with regard to the Companies. It appears a little obscure and unintelligible upon the notes at present, and I think a consecutive account would be useful to the Commission, and Mr. Hollams is prepared, with the

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permission of your Lordship, in about 10 minutes to give your Lordship the result of it.

(*Chairman.*) He had better do it at once then, and do so before we go into the Hertfordshire case.

(*Mr. Pope.*) Quite so. Before we left the case of the Companies I thought it was very desirable we should have something of that sort; we should then understand what the position was.

(*Mr. H. W. Cripps.*) There is a question which strikes me as very important. The practice with regard to private Bills has very likely altered a great deal since my time, but is there any precedent for proposing a Bill with a very long preamble reciting the whole case as to the charges which you have against other parties who may or may not be before the Committee? Your preamble, Mr. Balfour Browne, is contained in three or four pages.

(*Mr. Balfour Browne.*) We shall have to prove our preamble, of course.

(*Mr. H. W. Cripps.*) It recites all the charges we have heard here made against the Companies in former times.

You are going back very far. Now, is that in accordance with the precedents of recent private Bill legislation?

(*Mr. Balfour Browne.*) The practice varies very much. My learned friends, Mr. Littler and Mr. Pember, will both remember that in the Tilbury Bill of last year the whole of a long story of similar charges was set out in order that the Committee might be seized of the whole story, even in print, before the counsel opened the case. My learned friend, Mr. Littler, was for that Bill, and he will bear me out.

(*Mr. H. W. Cripps.*) It appears to me that it has no bearing whatever upon future legislation. What you are seeking for now is a new arrangement. Why should you trouble the Committee to go into matters which took place years and years ago?

(*Mr. Balfour Browne.*) It would be done in counsel's speech if it were not done in the preamble. Perhaps it would save that.

(*Mr. H. W. Cripps.*) I only wanted to know whether it was in accordance with precedent.

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Mr. JOHN HOLLAMS recalled and further examined.

29,716. (*Chairman.*) Now, Mr. Hollams, what have you to say?—If your Lordship will kindly refer to the evidence Mr. H. L. Cripps gave on the first day, at Questions 119 to 123 your Lordship will see that that evidence was calculated to create a false impression with reference to competition, especially Answer 123, when Mr. Cripps says, "At the conclusion of the inquiry in 1852, when these matters were under consideration, at the very end of it some words were inserted in the Water Companies' Acts, which had this effect, that they prevented the consumers from compelling any one company to supply water in an area then supplied by another company, the object being quite clear, as the Committee said, that is, to prevent absurd and unnatural applications of consumers and waste of money." With reference to that I will just, if your Lordship will allow me, mention that in the Appendix to the Report of the Committee of 1821 the arrangements between the Companies were set out and explained verbatim. If your Lordship will refer to page 193 of the Appendix, you will see the arrangements between the Companies are explained in detail. I need not trouble your Lordship with them, but only with the reference. Then, as your Lordship knows, that was referred to in the Report of the Committee of 1821. Then, if your Lordship will allow me, I will refer to the Bill which was introduced by the Government in 1851. To make more intelligible the effect of that Bill, if your Lordship will allow me, I will hand to your Lordship a memorandum issued by the Government previous to the introduction of the Bill explanatory of what the Bill was. That is the memorandum issued by the Government in 1851.

(*The witness handed in Memorandum. See Appendix X, 1.*)

29,717. (*Mr. Balfour Browne.*) What is the date of the memorandum?—It is not dated, but you will see it tallies with the Bill which was introduced. The Bill was introduced on the first of May 1851. The Bill of 1851, as your Lordship will see, proposed to amalgamate the companies, to constitute a board of directors, to consist of 12 persons, who were to be remunerated, the compensation to be settled by arbitration under the Lands Clauses Act. I gather from the proceedings that the companies were then paying about 5 per cent. The arrangement proposed by the Bill was that a new stock should be created, which was to bear interest at 5 per cent., and that the then existing rates were to be continued until there was a surplus. When there was a surplus the rates were to be equalised in the respective districts. Then, if there was a surplus, the stock was to bear interest at 6 per cent., and after paying 6 per cent. the benefit was to go to the consumer. The Bill contained a schedule which was to specify the rates, but that schedule was never filled up.

29,718. (*Mr. Pope.*) Whose administration was this?—Lord John Russell's administration in 1851. Then very voluminous evidence was taken by that Committee. They did not complete their inquiry, and, on the 5th August 1851, Sir James Graham, the Chairman of the Committee, said a few words (which, with your Lordship's permission, I will read) in the House of Commons explanatory of the position. Sir James Graham, in moving that the evidence taken before the

Committee on the Metropolis Water Bills be printed, said, "The House will probably expect that on an inquiry lasting between 30 and 40 days I should state how the matter stands. We thoroughly investigated the case on the part of the promoters of the Bill. That portion of the evidence is entire. We then proceeded to hear the evidence of those who contend for the advantage of the control of some municipal body elected by the popular voice. That portion of the evidence is also complete. We then heard the evidence of the existing water companies at very considerable length, but that evidence was not entirely closed. It is the opinion of the Committee, and it is in pursuance of their wish, I make the motion that the evidence should be printed, inasmuch as they think it will be conducive to the formation of public opinion during the recess upon the entire subject which may give facility for future legislation upon it. If it be the pleasure of the House to call upon us for an expression of opinion, the entire evidence not being taken, we do not think ourselves in a position to give that opinion to the House. I only move, therefore, that the evidence be printed." That closed the proceedings in 1851. Then, on the 6th February 1852, Lord John Russell's administration being still in office, Lord Seymour introduced the Bill of 1852, which your Lordship will see was upon entirely different lines, which Bill resulted in the Act of 1852, and provided for the continuation of the companies and for constant supply, &c. on the basis of the Act of 1852. Lord Seymour introduced that Bill in the House of Commons, and made a speech, on the 6th February 1852, in the course of which he said, "The companies had better be left to act separately or in conjunction, as they should find best. If municipal bodies, inexperienced as they would be, were to be suddenly called together divided, as doubtless would be the case, by party feeling, to provide for the supply of water to the inhabitants of this town, great delay in the first place would unquestionably arise. He was the more convinced of that from seeing what had taken place in other places"; and he made a long speech. Then, as your Lordship may recollect, the Government went out of office in February 1852, and Lord Derby's first administration was formed. Lord John Manners, who succeeded Lord Seymour in office on the 25th March 1852, in the House of Commons moved that it be an instruction to the Committee of Selection that they have power to fix the Committee on the Metropolis Water Bill for the 1st April. In doing so he wished to state that he did not pledge himself to support the measure introduced by his noble friend who preceded him in office, because, in one important item, that relating to the scale of charges to be made by private companies, the present Government dissented altogether from what was proposed by his noble friend. I should mention, my Lord, that, in the Bill introduced in 1852 by the then Government, there was a scale of charges applicable to houses not exceeding 10 $\frac{1}{2}$ l., but the scale, as in the previous Bill, was left in blank in the schedule—the schedule was not filled up. In the meantime the companies, as your Lordship will recollect, had introduced Bills which resulted in their Acts of 1852, and these Bills and the Government Bill went before a

Special Committee. The Committee at an early stage said they did not desire to hear evidence on the preamble, and Mr. Mellor, who was counsel for the Government, proceeded to deal with the clauses, and brought up a number of additional clauses. I will just call your Lordship's attention first to the rating clauses. Mr. Mellor says as to the rating clauses, "We have felt a considerable difficulty in insisting, in the state of information in which we are, upon a uniform rate being imposed upon every company however situate or however circumstanced, and therefore we have thought it right if the Committee and my learned friends should be of opinion that that is a proper course, or, at all events, if the Committee should think so, we propose not to proceed with that clause, but with reference to the companies who appear before Parliament with Bills of their own, and who will be obliged, in support of the preambles of the Bills and of the clauses which they propose to insert in those Bills, to give evidence to justify the scale of rates which they suppose themselves to be in a condition to charge; we propose, instead of asking the Committee to enforce upon all the companies one uniform rate, to permit us, when they appear before the Committee with their Bills, to watch those Bills, and upon the evidence which they shall give, and upon such information as we shall be able to afford the Committee, to give our assistance to the Committee in fixing as far as possible a fair and reasonable and, as far as may be, a uniform rate, without pressing that by way of clause now." Then the Chairman of the Committee said, "Perhaps it may be as well to intimate that the Committee have made up their minds to that course." Then Mr. Mellor made a long speech, in which he went into the history of the competition, beginning with the Acts passed for the purpose of competition in 1806, adopting exactly the line of argument which Mr. Cripps did in his evidence before your Lordship, and the arrangement between the companies in 1816 and 1817 which is referred to in the Appendix, to which I referred just now, and argued the matter at great length as to competition.

29,719. (*Chairman.*) In favour of competition?—In favour of competition against the combination of the companies. Then it may be worth while to mention that a member of the Committee, Mr. Barrow, interposed—which shows what was passing: "Am I to understand you to mean that every inhabitant of the parish of St. Mary, Islington, shall have power by this clause to ask either the New River Company or the East London Company to send a pipe to his house?"—pointing out, of course, the inconvenience which might result by the waste of money in laying duplicate pipes as well as the breaking up of the streets.

29,720. What was the answer to that question?—Mr. Mellor said, "If the house in question be within the ambit of both those Acts of Parliament, it is what we apprehend they are bound to do." Mr. Mellor argued it at very considerable length—I need not trouble your Lordship with that. But in the end the Committee deliberated. Then the counsel were informed "that the Committee had decided upon the following points. With respect to the time when the company should be required to introduce the constant system of supply, they had fixed four years. They had confined the district to that which was already supplied by the company and would not include that which might be contained in its Act of Parliament." I need not read the rest of it.

29,721. (*Mr. Balfour Browne.*) What is the reference to that?—That is on the 27th April 1852 at page 287. But it is not in the Blue Book, I think. These are the notes, day by day, and I do not know that that reference will quite hold. Then the Bill was framed accordingly, and ultimately came before the House on the 17th June 1852 and was debated at considerable length—I need not trouble your Lordship with the details—and ultimately passed through the House. Lord John Manners, in moving it, referred to the fact that it was not a Bill introduced by that Government—Lord Derby's Government being then in power—but that they had adopted it subject to the modifications. Thus your Lordship will see that Lord John Russell's Government of 1851, after the evidence taken before that Committee, at great length entirely changed their view, and instead of amalgamating the companies and forming a radical change, decided it was better to let

the companies go on—that there should not be a uniform rate, and that competition—that is the non-obligation to supply in the whole of the district which the company had power to supply, should, notwithstanding the difference in rates, be sanctioned, and accordingly your Lordship knows that clauses to that effect were introduced in most of the private Bills. I think that is all.

Cross-examined by Mr. BALFOUR BROWNE.

29,722. There is only one thing I should like to ask you. What you have read is from the 27th April 1852?—Yes.

29,723. I find that after that, Mr. Simpson gave a great deal more evidence against having this statutory restriction put upon the companies and said, "I have no doubt the committee will feel that the public and themselves will be very safe in the hands of a gentleman such as Mr. Simpson."—that is not Mr. Simpson, it is somebody else in argument—"it being borne in mind always that the companies are under the control to a certain extent of public opinion in these matters, that they are also under the control of that continual terror of competition possibly arising in case their rates should be pressed too closely and with the knowledge of this fact that up to this time the rating has been a voluntary assessment on our part, inasmuch as we are not controlled by any Parliamentary maximum, and if we were so disposed, that is, in other words, if we thought it to our interest so to do, we might have levied a much higher rate than any that we have done."

(*Mr. Pember.*) I suppose that is Sergeant Wrangham?

29,724. (*Mr. Balfour Browne.*) That is a speech of counsel after what Mr. Hollams has quoted as the deliverance of the Committee?—Yes, that was upon a different Bill. That was upon the Chelsea Bill. I have referred to the discussion on the Government—the public Bill. Of course, there was no prohibition to go into a district, but it only relieved the companies from being required to go into a new district. Therefore it is quite consistent with what Mr. Balfour Browne has read. There is the possibility of competition.

29,725. That was all?—All they were relieved from was doing that which a Member of the Committee pointed out—that a solitary individual might force a main to be carried miles away to the great inconvenience of everyone and the wasting of money. That was the state of things which was referred to by that Committee and which seems to have influenced them in 1852.

29,726. (*Mr. Pember.*) I suppose the Acts of 1852 left the districts of the companies unchanged?—Unchanged entirely. Various manuscript clauses were referred to; I have them all here in the Bill of 1852, but nothing, I think, turns upon them, and I need not trouble your Lordship with them. It was a very prolonged inquiry, both in 1851 and in 1852.

(*Mr. Balfour Browne.*) I might point out before Mr. Hollams goes, that it is not quite true that in that Act, the 1851 Act, the compensation was to be under the Lands Clauses Act. Clause 10 reads: "Such sum of the said consolidated capital stock as shall be determined by arbitration as herein-after mentioned, to be the just price or consideration for the waterworks, land, machinery, property, and rights of each of the said companies to be dissolved, shall be allotted to such respective company, and the amount of such stock to be allotted to each company shall be determined by arbitration to be made between the Commissioners of Her Majesty's Treasury and each company separately with all convenient speed after the passing of this Act, according to the provisions of the Lands Clauses Consolidation Act, 1845." So that the machinery was to be the Land Clauses Act, but the direction in that clause is that it be the just price or consideration for the waterworks, land, etc.

(*Mr. Littler.*) That is the same as the Lands Clauses Act.

(*Witness.*) Yes; it was applying the provisions of the Lands Clauses Act to an arbitration which otherwise it would be inapplicable to.

(*Mr. Littler.*) In a sense it is identical with the Lands Clauses Act.

(*Witness.*) I ought to have mentioned to your Lordship, that the Bill of 1851 contained a clause which authorised the Government to buy the undertakings at a premium of 25 per cent.

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29,727. (*Chairman.*) A premium of 25 per cent. upon what?—Upon the amount of stock which would be allotted by the arbitration. The Government had power—I will read your Lordship the clause in the Bill—

(*Mr. Balfour Browne.*) I do not really see that there is very much difference between what you state and what Mr. H. L. Cripps stated on the first day.

(*Chairman.*) Nor do I.

(*Witness.*) I think Mr. Cripps stated it was put in hurriedly at the end of the proceedings, and my object was to show that it was done most deliberately after the fullest inquiry and argument on the part of the Government—Clause 36 of the Bill.

29,728. (*Chairman.*) This is a Bill of 1852?—This is the Bill of 1851—the Bill which proposed amalgamation. "It shall be lawful for the said Commissioners"—that is the Treasury—"in case at any time hereafter money should be provided by Parliament for that purpose to purchase the property, works, and rights of the company, upon giving to such company six months' notice in writing, and upon payment out of such moneys as

may be so provided by Parliament of a sum computed after the rate of £125 for every £100 of the capital stock of the company."

29,729. I do not understand that. Is that the Bill which provided for the substitution of a new amalgamated company for all the other companies?—Yes.

29,730. And a new 5 per cent. or 6 per cent. stock as the case might be?—Precisely; and then a power to purchase at a premium of 25 per cent.

29,731. (*Mr. Pember.*) On the top of that?—On the top of that.

29,732. (*Chairman.*) To purchase from whom?—From the company.

29,733. From the new company?—It would be an amalgamated company, your Lordship sees, with the aggregate capital arrived at by the arbitration.

29,734. It was the power to the Government to substitute itself for the new company?—Yes, upon those terms.

29,735. (*Mr. Pope.*) Upon paying a premium of 25 per cent?—Yes.

The witness withdrew.

Mr. U. A. Smith.

Mr. URBAN ARMSTRONG SMITH called and examined.

29,736. (*Chairman.*) You are a civil engineer practising in Westminster?—I am.

29,737. And you have been since 1875 Surveyor and Engineering Adviser to the Hertford County Council?—I have.

29,738. And you have carried out works of water supply in the chalk districts of Hertfordshire and elsewhere?—Yes.

29,739. You have also charge of the county bridges?—Yes.

29,740. And that has brought you into contact with the streams in the county?—Yes.

29,741. And you have investigated on behalf of the Hertford County Council the water levels in the chalk of the county, and of the facts which govern the rise and fall of the springs and streams?—Yes.

29,742. Now, I must warn you that we have decided that we will not re-open those questions that were decided by the Balfour Commission, but we will hear you as to any new facts that have occurred since the Balfour Commission that throw light upon the subjects into which we have to inquire. Do you allege, as a fact of consequence, that the New River Company have shown consciousness that their supplies of water from the Lea are deficient by joining in the Staines Reservoirs Scheme?—Yes.

29,743. We must judge of that for ourselves. Has the drought of 1898 thrown any light upon the subject?—Yes, I think it has in a great number of ways. The rivers have been lower than at any previous period known. Wells have been very much lower, and one great fact stares us in the face, the Chadwell spring, which was never known to be dry before, has been dry this autumn.

29,744. We will go into the details of the Chadwell spring, if necessary, in a moment. Has the year 1898 revealed any new facts as to the River Lea?—Yes; the rise of the river was lower than ever known before and wells in the valley of the Lea were also lower.

29,745. I see you have prepared an immense number of figures relating to the Chadwell spring. In the first place, let me ask you how you ascertain what the average flow of those springs was from time to time?—From the year 1880 up to the present time the figures have been obtained from official sources.

29,746. What do you mean by official sources?—From Mr. Francis, where they have not appeared in blue books.

29,747. You mean the engineer of the New River Company?—Yes.

(*Mr. Pope.*) How furnished?

29,748. (*Chairman.*) Where has Mr. Francis given those figures?—For instance, may I take the period 1881 to 1896? This table was sent to Mr. Francis on the 18th May 1896, and returned by him on the 20th May corrected.

29,749. (*Mr. Pope.*) Have you a memorandum you could produce?—I will produce it if it is in the room.

29,750. (*Chairman.*) Before we can incur ourselves with this mass of figures, I want to know how far they are reliable?—I have an original document here, which was received from Mr. Hollams. (*The witness handed a document to his Lordship.*)

29,751. This is from January 1892 to April 1896. You say this was returned by Mr. Francis corrected?—No, it was the previous period to that which was returned corrected—between 1881 and 1896. In 1896 that was sent by myself to Mr. Francis, and he returned, corrected, a print of this. That document is for a subsequent period which has reached us through Mr. Hollams.

29,752. 1881 to 1896 covers the whole of this period. This is from 1892 to 1896?—My note is a brief note including both documents.

29,753. I am lost. You hand me this as what you sent to Mr. Francis; you now say it is something else?—No, I handed you that as received through Mr. Hollams. In 1896 I sent Mr. Francis a print of the figures up to that date, and he sent them back to me corrected, and I have adopted those figures. Since that period Mr. Hollams has supplied us with these figures.

29,754. (*Mr. Pope.*) I suppose you asked for them, and they were sent to you?—Yes.

29,755. (*Chairman.*) I do not see Mr. Hollams' name on this. The name on this is Mr. Longmore, Hertford?—Yes, Mr. Longmore is the clerk of the Hertfordshire County Council. They were sent by Mr. Hollams to Mr. Longmore, and, of course, then came to me afterwards.

(*Mr. Hollams.*) I was merely the medium of communication.

(*Mr. Pope.*) I suppose Mr. Longmore made some application to the Company for information, and it was sent by Mr. Hollams as the medium of communication. That is all I know about it.

(*Mr. B. A. Read.*) I may say that Mr. Hollams has been good enough to furnish me from time to time with figures, when I have asked for them, with reference to the flow of the Chadwell spring. As to the first period 1875 to 1879, we have never been able to verify them. But as to the other two periods, they have either been directly furnished through Mr. Hollams to me, and by me to Mr. Smith, or else they have come to me from Mr. Francis himself.

(*Chairman.*) It seems to me the only figures we can rely upon are those from 1881 to the present time.

(*Witness.*) Including 1881. Your Lordship has used the words "rely upon." The previous figures have not been checked by Mr. Francis. That is the difference.

29,756. Where do you get them from?—That I cannot tell you. I have been trying to trace them.

(*Chairman.*) Very well then; I am afraid we will not take them. We cannot rely on figures which come from the skies.

29,757. (*Sir John Dorington.*) Were they in the official possession of the County Council, or the body that preceded the County Council?—They are figures that I used in the year 1896, and when I took them up again this year I was not able to trace the authority. That I had authority for them, I have no doubt, because I used them in 1896.

29,758. (*Chairman.*) I really do not know that we need go back before 1881. Then you have a mass of figures showing what the Chadwell springs produced from 1881 down to 1896. Now, what inference is to be drawn from all those figures?—That there is a gradual decline in the quantity yielded by the spring, and the decline over the period shown amounts to roughly 40 per cent.

29,759. Over what period?—The period from 1875.

29,760. Now you are going back to 1875—we were going to begin with 1881?—If you take 1881 you will find the same decline over the shorter period, although, of course, the percentage of decline will not be quite so great because the period is shorter. We can leave out the figures from 1875 to 1877. The average daily flow from 1878 to 1880 was 3·61 million gallons, and from 1886 to 1898, 2·06 million gallons.

29,761. How do you get the figures between 1896 and 1898?—Those, I believe, have been received through Mr. Hollams.

29,761a. You believe?—They certainly came from Mr. Francis.

(*Mr. E. A. Read.*) That is so.

(*Witness.*) Mr. Francis, in the documents sent me, gave me a note of the date when the spring ceased to flow.

29,762. (*Chairman.*) You had better put in, then, I think, your tables, showing the average daily flow of the Chadwell spring, with the average yearly and average winter rainfall from 1875 to 1898?—Yes, my Lord.

(*The witness handed in Tables. See Appendix K, 1.*)

29,763. One result of that is that, whereas, from 1881 to 1883, the average flow of the Chadwell spring was 3·49 million gallons, in the three years 1896 to 1898 the flow of it was only 2·06 million gallons?—Yes. You will also observe that the decline is gradual, more or less, between those extreme years.

29,764. On the other hand, when I look at your figures in detail—not taking periods, but taking them year by year—I see that in the year 1893, which was a bad year, the flow of the spring was 2,216,587 gallons?—Yes, it necessarily varies with the rainfall; and the object of collecting them into those groups is to obliterate, to a certain extent, the variations caused by heavy rainfalls and light rainfalls.

29,765. I have mentioned the figure for 1893; but, on the other hand, in 1884, the produce was only 2,103,000 gallons. You have an immense mass of figures of the discharge of the spring in each month of each year.

(*Mr. Pember.*) I really begin to think that the love of figures is the root of all evil.

29,766. (*Chairman.*) You say that represents a decline of 43 per cent. between the years 1875–7 and the years 1896–8?—Yes.

29,767. In the tables you put in, you give the rainfall over different periods. I do not understand that. What is the meaning of “Ratio to mean”?—It means this; for purposes of easy comparison we take the mean quantity, and call it 100, and then work out the other amounts in a ratio to that 100; so that you can see at a glance. If the figure is 93, you know it is 93 out of 100—93 per cent.

29,768. What do you take as your mean rainfall?—The rainfall refers to the county of Hertford, where there are a large number of stations. The mean rainfall for the county for the 50 years 1842 to 1892 is 26·33 inches.

29,769. And that is what you call 100?—That is what we call 100.

29,770. Then, in your tables your rainfall is represented by the ratio to that mean?—That is so.

(*Chairman.*) I see there that 1896 to 1898 was the lowest of any year since 1875—

(*Lord Robert Cecil.*) No, 1887 to 1889.

(*Chairman.*) Yes, 1887 to 1889 is the lowest of any year since 1875. There the average of the three years is only 92.

(*Mr. Pope.*) I think your Lordship will find this is evidence which was before Lord Balfour's Commission.

(*Chairman.*) Was it?

(*Mr. Pope.*) And if we are not going to disturb that, it has no reference to what has taken place since. That is quite clear.

(*Chairman.*) I do think Lord Robert Cecil ought to protect us from evidence of this sort.

(*Lord Robert Cecil.*) I am not sure that this was before Lord Balfour's Commission.

(*Mr. Pope.*) I was referring to Lord Balfour's Report a little while ago, and I saw that Mr. Urban Smith gave evidence then; and some of these figures caught my eye, and I traced them as having been relied upon by him then.

29,771. (*Chairman.*) Was that so?—There is no doubt a few of them were; but to what extent I can hardly tell you at the moment. They were certainly not all before the Commission.

(*Lord Robert Cecil.*) I am told these tables were not before Lord Balfour's Commission.

(*Mr. Pember.*) Not in this way, perhaps.

(*Mr. Pope.*) That is to say, you have manipulated the tables afresh, apparently. But the facts were not only before Lord Balfour's Commission, but they were referred to in their Report.

(*Lord Robert Cecil.*) We have expressly avoided manipulating the figures. I do not think you will find the tables are so complex as they appear to be at first sight. It is merely re-stating the same figures in another form, in order to avoid the charge that we have manipulated the tables in any way, showing that whatever way you take this thing the result is the same.

(*Chairman.*) The result is not, to my mind, very conclusive upon these tables. We are now upon the average yearly rainfall. It is a low rainfall in 1896–98, but not so low as 1887–89.

(*Witness.*) By grouping them into periods, my Lord, you obliterate to a certain extent the ups and downs.

(*Mr. Pember.*) That is what we do not want to do; we want to see what the ups and downs are.

(*Chairman.*) There is this result, that with the lowest rainfall of all, from 1887 to 1889, you get a higher produce from the Chadwell spring than you do where the rainfall is higher.

(*Lord Robert Cecil.*) That is the point, my Lord.

(*Chairman.*) Namely, from 1896 to 1898 and from 1884 to 1886.

(*Lord Robert Cecil.*) Yes.

(*Chairman.*) That is so.

(*Witness.*) Yes, my Lord.

29,772. Now then, winter rainfall, is that material?—It is only material in this way, that many people claim that the flow of a spring depends not so much upon the yearly rainfall as upon the winter rainfall. To a very great extent that is so, and so as to meet that criticism I have given the winter rainfall as well as the yearly rainfall; but it gives practically the same results.

29,773. What do you take as your mean winter rainfall in Hertfordshire, how many inches?—13·09.

29,774. Then you have put in the average winter rainfall for the three-year periods?—Yes.

29,775. And you have worked it out for four years as well as for three?—That is really to show that it is not a manipulation, but that whichever way you take it you get practically the same result.

29,776. And you have worked it out for periods of four years, five years, six years, seven years, and eight years?—Yes.

29,777. Well, you have put in all those figures?—They are all put in.

29,778. Now, if you will give us your inference from all these figures in your own way, I shall be glad.

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What do you ask us to infer from those figures?—This is the inference, that the pumping by the water companies has increased almost year by year, and as that pumping increases so the flow of the spring has decreased. The inference I ask you to draw from that fact is that the pumping of the water companies is reducing the water in the chalk and reducing the flow of the springs feeding the rivers,

29,779. Where are the wells whose pumping you say has reduced the Chadwell spring? Do not let us fly off to the chalk and the rivers. We are on the Chadwell spring. Now, where is the well whose pumping you say has diminished the Chadwell spring more than the decline of the rainfall would account for?—The wells are in the valley of the Lea.

29,780. Name them at once, and tell us how near to the Chadwell spring they are. Which well do you say is responsible for the decrease of the Chadwell spring?—I say there are several.

29,781. Which are they?—First of all, nearest to the Chadwell spring is a well called Broadmead; next to that Amwell End well. Then we have the Amwell Hill well lower down, Amwell Marsh well a little further south, Rye Common well, Hoddesdon well, Broxbourne well, Turnford well.

29,782. How far off is Turnford well from Chadwell spring?—Between five and six miles—about six miles.

29,783. Are there any more wells to which you impute the decline in the Chadwell spring?—There is no doubt that those close to the spring have the greatest effect upon it, but it is impossible for me to draw a line between the well where the effect ceases, and where it does not exist.

29,784. You are unable to say?—I am quite unable to say how many wells affect that spring, my opinion is that, more or less, they all affect it; they all must affect it, because they all tend to lower the water in the chalk—to reduce the quantity.

29,785. There are two wells at Mardocks and at Ware; you have not mentioned those?—Those are wells proposed in 1896. They have not yet been constructed.

29,786. You have not got, I suppose, the quantities of water which have been pumped from those wells which you have named during those years?—Only in the aggregate.

29,787. From these and many other wells, I suppose?—No, we have the quantity pumped by the New River in the aggregate, and the quantity pumped by the East London; but we have not the quantities pumped from the individual wells at particular times.

29,788. When did they begin pumping those wells? For instance, take the wells that are nearest—Amwell End well, the Amwell Hill well and Amwell Marsh Well; when did they begin to pump those?—Do I understand you to ask when were they constructed, or when did they begin to pump?

29,789. When did they begin to pump?—That is what we do not know, and what we would wish to know. Unless we watch the pumping stations we do not know when they are pumping and when they are not pumping. But we know they pumped a great deal in 1898. We know they pumped a great deal more in 1898 than ever before.

29,790. You have shown a gradual decline from 1875. You ought to show an increase in the pumping from those wells onward from 1875 to 1896?—That, I think, I could supply your Lordship with—that is, the quantity in the aggregate.

29,791. In the aggregate of what?—The aggregate of wells.

29,792. By the wells, do you mean, of the New River Company?—Yes.

29,793. There are some to which you will not impute any effect upon the Chadwell spring?—I say they all have some effect. We should be very glad to have the particulars of the individual wells.

29,794. So should we. If you do not give them to us, I do not see what conclusion we are to draw?—Last season the wells of the New River Company were yielding, I think, between 22 and 23 million gallons a day, whereas, in previous years, they only reached—

29,795-6. What previous year? Do not give me "previous years," but give me a particular year.

(*Mr. Pope.*) What is that book you are referring to. Is it a copy of your evidence before the Balfour Commission.

(*The Witness.*) No. It is a print of a statement I prepared in 1896, and it happens to give the pumping figures. In the year 1891 the average quantity pumped by the New River Company was 8.35 million gallons a day. Last year it was 16 odd million gallons a day.

(*Chairman.*) Where do you get those figures from?

(*Mr. Pember.*) Who told you it was 16 last year?

29,797. (*Chairman.*) That is exactly what I am asking him?—They are from the Water Examiner's Reports.

29,798. You got those figures from the Water Examiner's Reports?—Yes.

29,799. How does it go between? When was the 8 million gallons—what year?—I have got the quantities per month. The average for the whole year is 8 million gallons per day.

29,800. For what year?—1891.

29,801. What was it in 1893?—In 1893 it was 12.85.

29,802. 1895?—13.67.

29,803. 1896?—10.95.

29,804. That is two millions less than in 1893?—Rather less than two millions.

29,805. Now 1897?—In 1897, 10.62.

(*Mr. Pember.*) Less again.

29,806. (*Chairman.*) In 1898?—In 1898 I got a figure—it is not a total for the year, because we have not been able to complete the year, not having the information, but in August it was 25.97. In September it was 26.97, but those are the two highest months.

29,807. Was that in a month?—Those figures are all per day.

29,808. Give us the lowest that you have got for 1898?—9.15—that was in March.

29,809. (*Mr. Pember.*) How many months have you got figured out there?—October, November, and December excluded.

29,810. (*Chairman.*) Then what is the average for the months from January to October?—You shall have that in a minute.

29,811. You say you have not got the information when the pumping began in these different wells?—Not with reference to the Chadwell spring.

29,812. Nor the amounts pumped from each particular well?—No.

29,813. Nor the original rest level of the water in any particular well?—Except for the year 1891, and that is given in the Royal Commission Appendix—the levels are given by the New River Company's Engineer.

29,814. You cannot tell us whether any of those wells have been deepened?—No, the only particulars I have with reference to individual pumping is with reference to the Rye Common Pumping Station, and there I know of certain days when the pumps were stopped where they give certain results, but I ought not to bring it in here because it has no reference to Chadwell spring.

29,815. Very well, do not bring it in. I see by the table of rainfall that has been given us from Greenwich, the average rainfall has steadily declined since the year 1881 onwards by periods of five years. For instance, the average rainfall for the five years 1881-5 is 24.04 inches. The five years from 1886-90 is 24.126 inches; the five years from 1891-5, 21.89 inches; the three years from 1896-8, 21.23 inches?—Yes. I do not know whether there is any exact relation between the rainfall in Greenwich and the rainfall in Hertfordshire, but it is clearly the rainfall in Hertfordshire which governs the flow of the rivers and springs. It is there that the rain comes from, and the Hertfordshire rainfall may be somewhat different. I will admit that in Hertfordshire the rainfall has slightly decreased over that period, but very slightly, and that I show by the figures which have been already put in.

(*Mr. Pember.*) It is not very far off Hertfordshire after all.

(*Mr. Pope.*) Of course, it does not go to the same extent. Upon this question whether the depression is due to diminished rainfall, there is an express deliverance upon that by Lord Ralfour's Commission.

(*Chairman.*) It is so difficult when figures of this sort are flung at one's head without regard to what we have to decide.

(*Mr. Pope.*) It was only up to 1895-96, but the same principle is involved.

29,816. (*Major-General Scott.*) Have you several stations for observing the rainfall?—Yes, 13 I believe the number is.

29,817. Is this the average of 13 stations?—I am told there are 17 stations.

29,818. Is this the average?—It is the average.

29,819. Of 17?—Yes; the main records are kept by Dr. Hopkinson, and he receives the particulars every month from the people who keep these different stations, and he furnishes me with the return.

29,820. Is this the average of 17?—Yes.

29,821. (*Sir George Bruce.*) Whom does Dr. Hopkinson represent? For whom does he act?—He does it for his own pleasure very much, and he supplies the Natural History Society of Hertfordshire with the results. They are all published.

29,822-3. (*Chairman.*) At any rate, you say that your figures show that there has been a decline in the produce of the spring, larger than can be accounted for by the decline in the rainfall?—Yes, that is what I do say.

29,824-5. And your inference is that the pumping has made the difference?—Exactly.

29,826. In 1898, there was a time when the Chadwell spring ceased to overflow?—That is so.

29,827. What is the level of Chadwell spring?—The normal level of the Chadwell spring is about 110'50; but, of course, it varies a few decimal points.

29,828. What do you mean by 110'50?—110'50 feet above ordnance datum.

29,829. At that level does it overflow into the New River?—It does.

29,830. At what period in 1898 did it cease to overflow?—On the 27th August 1898.

29,831. What happened then?—The level of the water in the spring declined. That was followed by the New River Company putting in a pump and pumping water from the spring into the New River.

29,832. Was the level of the spring below the level of the River Lea?—Yes. I cannot vouch for this as a fact, but I believe that the New River Company first found that the spring was not overflowing, by the fact that the water from the River Lea was flowing back into the spring.

29,833. You say you cannot state that as a fact?—It must have been a fact at some period or another for this reason, that the New River Company put a dam across the conduit conveying the spring water into the New River. When that dam was put across the conduit the water behind the dam, that is the water in the spring, fell.

(*Mr. Pember.*) Mr. Francis fully explained that. He said they discovered a leak in the basin of the spring, so that instead of its bubbling over it ran down into the fissures of the chalk and went away. He explained that very fully.

(*Witness.*) This photograph would show you the condition of things after the dam was put across. You will see the back part of the picture shows the conduit leading the spring water away. (*Handing in photograph.*)

29,834. I do not see the conduit, and where is the dam. What do these pictures show: do they show the dam, or what do they show?—That is the spring lower down. The spring is usually up to that line where you see the grass beginning to grow. It overflows and passes along that channel to the river. At this time the dam has been put across there by the New River Company, this water then sinks several feet below the normal level.

29,835. (*Sir George Bruce.*) How does that make it sink?—Because there was previously no supply, and the only supply during the last few days must have been coming this way—working back.

29,836. (*Major-General Scott.*) That represents the level of the underground water. This water passes at that level into the chalk; is not that the case?—It may.

29,837. This represents the level of the underground water. The water passes at that level into the chalk. If you dig a well down here when you get to that level you would find the water?—Yes. Mr. U. A. Smith.
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(*Sir George Bruce.*) If this is all chalk, of course, you would.

(*Major-General Scott.*) Yes.

(*Sir George Bruce.*) It is the level at that particular time, but sometimes the level is up here.

(*Major-General Scott.*) Yes.

29,838. (*Chairman.*) Have you any means of either confirming or denying Mr. Francis's statement, that at that time a leak occurred in the channel and that this dam was put in to prevent the Chadwell spring running away into the leak?—It was supposed to be below the line of saturation in the chalk. There is a leak, no doubt, and a permanent leak. There are passages and fissures in the chalk and that leak must mean water flowing to their wells. The water is being drawn down below the line of saturation. If you get a leak below the line of saturation it means that there is some vacant space—some water vacuum at a lower level. Where is that? There is no other vacuum, but at the bottom of the New River Company's wells.

29,839. You seem to me as far as I can understand you to be going to a different point. It was suggested to us by Mr. Francis that there was a leak in the conduit from the Chadwell spring to the River Lea.

(*Mr. Pember.*) A leak in the basin.

29,840. (*Chairman.*) A leak in the basin?—Yes, in the basin.

29,841. And it was on account of that that they put in this dam and repaired the leak?—My contention is, that saying the leak existed there will not explain the thing. Where did the water go to if it did not go to their wells? There is a mass of water down below.

(*Mr. Pember.*) It went into the sea.

(*Lord Robert Cecil.*) Otherwise there would not be a spring.

(*Witness.*) There is a mass of water.

29,842. (*Major-General Scott.*) If there were no leaks or what are really cracks in the bottom of the basin there would be no upward flow when the water rose in the chalk?—Exactly. The leaks enable the water to come up. If the water goes down it is because you take something away from the bottom—other water, it must be so.

29,843. (*Chairman.*) Just going back for a moment to the rainfall averages—your five year average means. Beginning with 1881 your means for the periods corresponding to these which I gave you for Greenwich are 109'4 in 1898; and in 1897, 95'3?—Yes.

29,844. (*Sir John Dorington.*) Your means only vary from the Greenwich ones by the fact that you take 1880-81 as one year, and Greenwich gives you the year 1881. Beginning with your 1881 and taking five years' averages of your means, you get your means 109'4 in 1898; and in 1897, 95'3, giving a constant diminution beginning with 24'04, 24'126, 21'129, 21'23?—They are practically the same.

29,845. They are practically the same. You begin with a point when the Hertfordshire rainfall was not the same as the Greenwich rainfall?—I was not aware there was any relation between them. I do not know what the Greenwich rainfall is.

29,846. (*Chairman.*) You must take that from us. We are now upon your means of rainfall. They show a similar decline from the year 1880 to the year 1898—a steady decline in the rainfall in the periods of five years?—Yes, my tables show a steady decline in the rainfall, but only a very slight decline compared with the decline in the spring.

29,847. (*Sir John Dorington.*) They are from 109 to 95?—In my three-year periods I show a decline in the spring of 43 per cent. and a decline in the rainfall of 15 per cent. for the same period. That is what my figures work out at, and those are the figures most against myself of all—the periods I have taken; and that is why I give them to your Lordship.

29,848. (*Chairman.*) Owing to the drought in 1898, I suppose the water level throughout the chalk district fell?—Yes.

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29,849. Probably fell below the bottom of the basin into which Chadwell spring flows?—No, it did not. I can show by a series of wells leading up to the spring that the water was above. It was reduced—the water fell with the spring, but not to the same level, and when the spring rose again, the water in all those wells rose showing an inter-communication between the two.

29,850. (*Major-General Scott.*) But the level of the water fell to a certain extent in the Chadwell spring basin, did it not?—It fell to a certain extent in the Chadwell spring basin, and then the pumping operations began in the Chadwell spring, and it was lowered very much more. To what extent I could not ascertain. My impression is that the New River Company pumped down to 10 or 12 or perhaps more feet below the normal level.

29,851. (*Chairman.*) You mean they put a pump into the Chadwell spring?—They put a large centrifugal pump into the Chadwell spring, and pumped from there over the top of their dam into the conduit of the New River.

29,852. (*Major-General Scott.*) That would bring it still lower than it would naturally stand, if there were no pumping?—No doubt, and that operation further lowered our wells and dried our wells in the neighbourhood.

29,853-4. (*Chairman.*) Just give us any facts about wells in the neighbourhood that were dried?—As soon as the Chadwell spring ceased to flow, I kept some observations upon wells leading away to a distance of 1,200 yards from the spring. I can give you all those particulars and details.

29,855. Please give us them in your own way?—The result of that lowering of the spring was to lower the water levels through this line. Perhaps you will allow me to put that before you—the different wells.

(*Mr. Pember.*) 1,200 yards. That was the extreme point. That was at the Union Workhouse.

(*Mr. Pope.*) And what was the date of these observations.

29,856. (*Chairman.*) Just give us something that will guide our minds. You keep flying from document to document. What is it you say? What wells were lowered?—You see the wells marked in red on that plan. Some of them were dried, all of them were lowered.

29,857. Give us the names please?—The nearest well to the Chadwell spring is Limekiln Terrace.

29,858. There was a private well there, was there?—There was a private well there.

29,859. And when did that sink, or when did it fail?—At Limekiln Cottages there is a well sunk into the chalk at a distance of 320 yards from the spring in a south-westerly direction. This well has been in existence for 34 years, and it had never been known to fail. But shortly after the fall in the spring it became dry—the bottom of the well being 107·97 feet, and the water in the Chadwell spring being well below that level.

29,860. That was shortly after the 27th of August then?—Shortly after the 27th of August.

29,861. (*Sir George Bruce.*) What is the depth of that well from the surface?—The well was then lowered.

29,862. (*Chairman.*) You say when the well failed the bottom of it was 107·97 feet above ordnance datum?—Yes. That you will see is about 2 feet below the normal level of the Chadwell spring. The well was lowered about the 8th September 1 foot 9 inches, but no water was obtained. In the following week the well was lowered a further 5 feet 9 inches, and being then below the level of the water in the Chadwell spring, water was obtained in the well. That was about the 20th September, the New River commenced to pump water from the spring into their conduit.

29,863. (*Mr. Pope.*) What year?—1898—by these means further lowering the level of the water in the spring. The effect of that was that when the pumping at the spring continued day and night the well was even again dried. The pumping of the spring was discontinued on or about 3rd November, 1898, and the water in the well then commenced to rise.

29,864. (*Sir George Bruce.*) What was the depth of the well below the surface?—47 feet. That is all chalk there.

29,865. (*Sir George Bruce.*) Was that before those extra depths were put in?—Yes. Then we get a well at Waverly House, at Jubilee Villa, and at Gallows Lane Cottages. The history is pretty well the same kind of thing for those wells. With reference to the well at the Union Workhouse, I should like to lay before the Commission—

29,866. Now you have mentioned a fresh well. Neither of those had you mentioned up to this moment. You mention the Union Workhouse?—That is one at the extreme end, and I want to draw your special attention to it.

29,867. (*Sir John Dorington.*) Is it on this plan?—Yes, it is on that plan.

29,868. (*Chairman.*) Is it the Union Workhouse, Hertford?—Yes, that is about 1,200 yards from the spring. If your Lordship will be good enough to look at this section you will see this reference to the level of the water. Before I go further, I should like to explain this with reference to the section. There are two wells close together. It so happens that I was able to get a record of one up to the 21st October, and of the other from the 8th November up to the end of December. They are close together, and they have been tested together lately, and found to be of the same level. So that I consider I am warranted in making a complete section out of those two wells. They show this, that from February up to September there was a very slight fall in the level of the water. That is the time when the Chadwell spring had failed on the 27th August, and there you will see a gradual decline of the level of the water down to about the 3rd November. I have not got the exact date when the pumping at Chadwell spring ceased. We then got a very rapid rise in the level of the water.

29,869. (*Sir George Bruce.*) What does this blue line here represent?—The level of the water in the well.

29,870. (*Major-General Scott.*) Was pumping going on at the workhouse well?—No, they were short of water then, and they had to get it from Hertford.

29,871. (*Chairman.*) You ask us to infer that the fall in the level of the water in this workhouse well between the 20th September and the 3rd November was caused by the pumping at the Chadwell spring?—Yes, certainly.

29,872. And that was a well 1,200 yards from the Chadwell spring in a south-westerly direction?—Yes. There is a similar case at Limekiln Terrace.

29,873. (*Sir John Dorington.*) Why is the water level between the 21st October and the 6th November dotted as assumed?—I have no record of the level of the water over that period. It might have been very much lower before the pumping ceased.

29,874. (*Chairman.*) Can you tell us what amount of pumping took place at Chadwell spring in that interval between the 20th September and the 8th or 10th of November?—I had some conversation with Mr. Francis with reference to the quantity; I am not sure that I understood him correctly, but what I did understand was that he was pumping nearly two million gallons a day. But I have no means of ascertaining what the quantity was.

29,875. (*Sir George Bruce.*) I am not quite clear as to what you were doing, or as to what people were doing at the Union Workhouse with that well while all this was happening; was no supply being derived from those wells?—Up to a certain date they had water, and then the water sank, and they have since had to deepen the well.

29,876. When you say they had water, were they taking any out?—They were taking a small quantity out, and then they had to get water from Hertford afterwards when the water sank to a certain level.

29,877. Can you say how much they took out, and when they stopped pumping, if they stopped pumping?—I cannot say that, but when I measured the well there was no pumping going on.

(*Sir John Dorington.*) What was the depth of this workhouse well from the surface?

29,878. (*Major-General Scott.*) During the period represented by that drop in the section you have given us, was there no pumping going on at the Union Workhouse?—I think not.

29,879. (*Chairman.*) You are not sure?—I am almost sure not; because they had no water to pump.

(*Sir John Dorington.*) In fact, when you had got the dotted line assumed, it means that they were not within reach of the water.

29,880. (*Chairman.*) When did they cease to get water from that well?—I think I can clear up the point in this way. I have here a different kind of section showing the fall of the water through all the wells, and the fall was gradual.

29,881. But you see, the simple question I put to you is, when did they cease to get water from the Union Workhouse well?—I cannot tell you.

(*Sir John Dorington.*) Was it on the 21st October, that is when your dotted line begins?

29,882. (*Chairman.*) Do I understand that you measured the depth at which the water was in the well at those different dates?—Yes, wherever it is shown—wherever there is a line.

29,883. Then you could get at the water in the well; there was water in the well then?—The record of the Union Workhouse well after the 21st of October was taken by the well sinker.

29,884. Yes, but between the 20th September and 21st October you found the water in the well at the levels you have shown?—I was just explaining to you, those levels were taken by the well sinker who was called in to get them more water. The levels from the 8th November onward were taken by myself from the other well.

29,885. This well sinker found the water at the levels you have shown?—Yes.

29,886. He found water in the well?—Yes.

29,887. Then what was the use of going to Hertford if they had got water in their well at those levels?—Not sufficient to draw from or pump from.

29,888. (*Major-General Scott.*) Do you consider your measurements were taken to the rest-level of the well?—Yes, because I took them from the adjoining well, where there was no pumping machinery; and at that time they were not pumping from Gallows Hill.

29,889. (*Sir John Dorington.*) We have not had an answer to the question, what was the depth of the well?—47 feet.

29,890. And the water from the surface along this line—

(*Mr. Pope.*) You gave us 47 feet as the depth of the nearest well. This workhouse well cannot be the same level exactly.

29,891. (*Chairman.*) What is the depth of the workhouse well—47 feet?—The Union Workhouse well is 47 feet.

29,892. And that was not deepened?—That has been deepened since.

29,893. How much?

(*Sir George Bruce.*) It has been deepened about 6 feet 6, has it not?

(*Witness.*) I have a section of the Limekiln Terrace well, showing how the water went down at the very same period. They all did the same thing.

29,894. (*Chairman.*) Whether that sinking in the level of the water in those wells was due to the general sinking of the water level in the chalk formation, or whether it was due to some other cause, you cannot tell?—Yes, I think I can tell you, because otherwise why should the water in all those wells go down with the pumping, and rise when the pumping ceased? That section shows how it goes down suddenly, and rises equally suddenly during the period the pumping is going on.

29,895. (*Sir George Bruce.*) I suppose they were pumping more water out of these wells at the time than the ordinary water in the chalk could supply—could follow up?—No doubt that was so.

(*Sir George Bruce.*) It did not come in fast enough.

29,896. (*Chairman.*) That is, they were pumping not only at the Chadwell spring, but they were pumping at all these intermediate wells?—Yes, they were.

29,897. Limekiln Terrace?—Chadwell spring is nearer to these wells than any other pumping station.

29,898. Not nearer to these other wells: were they not pumping at Jubilee?—These are not pumping wells at all. They are only draw wells. They only draw a bucket occasionally. The draw from these wells does

not affect the level at all. I thought your Lordship was referring to the New River Company's wells.

(*Chairman.*) No; I am referring to these intermediate wells.

29,899. (*Major-General Scott.*) What was the nearest well of the New River Company where they were pumping?—I cannot tell you where they were pumping.

29,900. What was the nearest well of the New River Company to those wells you are now speaking of?—Broadmead.

29,901. What distance would that be?—It is roughly a mile and a quarter from the well at the Union Workhouse.

29,902. (*Chairman.*) Then that was not so near as the pumping at Chadwell spring?—No, it was not.

29,903. You have attributed all these changes in the wells to the south-west to the pumping in the Chadwell spring?—And that is the nearest point where pumping was going on.

29,904. No doubt. Have you observed any wells that were above Chadwell spring?—Those are all above Chadwell spring.

29,905. They are all below it?—They are all to the west—all further up the river—further up the valley.

29,906. They are all to the south-west?—The river runs from west to east at the point of Chadwell spring.

29,907. You do not mean to say that the flow through the chalk is from Hertford towards Chadwell?—It is more that way than the reverse; but I should think the flow of the water through the chalk where it is uninfluenced by the pumping at Chadwell and round there would be in a south-westerly direction. You see all among these pumping stations it is impossible to say without gradients where the flow is.

29,908. You have no record of the pumping from day to day at the Chadwell spring, or at any of the other wells of the New River Company?—No. If we had those particulars we could compare them then with the rise and fall of the wells we know, and put better information before a Commission of this sort.

29,909. Where did the water come from that was fetched from Hertford?—They have waterworks there.

29,910. Waterworks are not water. Where does the water come from?—The water is pumped from the chalk to the north-west of Hertford.

29,911. (*Sir John Dorington.*) How far off?—It is about three-quarters of a mile from the centre of Hertford in a north-westerly direction.

29,912. (*Chairman.*) Was pumping going on at these works—had they wells?—They have a well, yes.

29,913. What depth?—I think it is between 70 feet and 100 feet.

29,914. Do you know what quantities they were pumping during this time?—Between 200,000 and 300,000 gallons a day.

29,915. During these months?—I believe so. I am speaking very roughly. I know generally what the water supply of Hertford is, and I believe it is about that figure. We will take it in this way. The outside population is 10,000. That would give us 300,000 gallons a day at 30 gallons a head.

29,916. Do you know whether they were pumping more or less there during this period?—No, I do not know, but I know the pumping there pretty well averages the same all the year round, except just in the summer time they may pump a little more.

29,917. (*Sir John Dorington.*) Did anything happen to their well?—No, there was no difficulty in getting water there.

29,918. Their rest level remained the same?—Because they have got a very deep well—I mean to say deep below the line of saturation, and you must observe that the quantity of 300,000 gallons from one well is a very different thing from three millions from the other.

29,919. Quite so. Their rest level was not disturbed, you think?—I do not know at all.

29,920. (*Major-General Scott.*) Do you know what the rest level of that well is?—No.

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Mr. U. A. Smith. 29,921. (*Chairman.*) You do not know whether it fell, or how much it fell?—I do not.

13 Mar. '99 29,922. In fact you have confined your attention to the New River wells?—And a great number of other wells in the county. I have particulars of a great number of wells, but that was one I did not observe. I have observed as many as time would permit and the number of my assistants would permit.

29,923. You said that this well was north-west from Hertford, I think?—Yes, it is up the valley of the Beane towards Stapleford. There is a place called Mole Wood; it is at Mole Wood, in fact, on the River Beane.

29,924. (*Sir George Bruce.*) There is a place marked "Bengeo"; is that the one you mean?—That is the one. The well to the west of Bengeo to the south. That is over two miles from the Chadwell spring—about two miles.

29,925. (*Sir John Dorington.*) How far would that be from the Hertford Union Workhouse well?—A little over a mile.

29,926. (*Chairman.*) I think that is enough about the Chadwell spring, perhaps. Will you pass to the River Lea? There, again, do you find a decline in the River Lea greater than could be expected from the decline in the rainfall?—Yes, that is so.

29,927. Will you put in your tables then, showing the flow of the Lea?—Yes.

(*The witness handed in Tables. See Appendix K, 2.*)

29,928-9. Have you put those tables in?—Yes, the tables give the calculations in detail, and then they are summarised for the convenience of the Commission.

29,930. There you say again the percentage of decline in the daily flow of the Lea is greater than the percentage of decline in the average yearly rainfall?—Yes, that is so.

29,931. You attribute the difference to the pumping, I suppose?—Yes.

29,932. The only practical question we have to consider is what expenditure will have to be incurred in the Lea Valley in order to get from the River Lea the supply that Lord Balfour's Commission allotted to that source? Do you see any reason to differ from the estimates that have been laid before us by Sir Alexander Binnie and by Mr. Middleton?—I have not gone into the question of cost at all.

29,933. Then, I will not trouble you. That is the only question we have to consider. You deluge us with facts which we have nothing to do with. We already know—it has been admitted on all hands—that a great deal of storage would be necessary if a year like 1898 recurs in order to get from the River Lea the quantity of water that Lord Balfour's Commission estimated. You see no reason to doubt, that with sufficient storage, that can be done?—With sufficient storage, if the pumping does not take up the whole of the river beforehand.

29,934. Have you any facts to lay before us to show that the pumping diminishes the flow of the river?—Not further than what your Lordship just touched upon, the flow of the Lea in those tables.

29,935. That is to say you find a decline in the flow of the Lea greater than the decline in the rainfall, and you say the difference is caused by the pumping?—That is it exactly.

29,936. Do you complain that the New River Company would not give you the information about the rest levels of their wells and the amount of pumping, and so on?—Yes.

29,937. We will take it, if you like, that you have got a grievance. You cannot give us, therefore, any facts in detail to show that the pumping at any particular well has had an effect either upon the river or upon the other wells?—Upon other wells I have given you several instances. For instance, there is the Haileybury well, which is a very strong case indeed, showing that the effect at a distance of something like a mile-and-a-half is felt in the course of a few hours.

29,938. Give us any facts about the Haileybury well that you have got?—Here is a diagram showing almost the daily level of the water in the Haileybury well for certain periods for July and from September up to December.

29,939. In 1898?—In 1898, showing the effect of the pumping at the Rye Common works of the New River Company. If your Lordship will look at the left hand side under July, you will find there some lines coloured blue, which show on each day (the days being given at the top of the column) when the water was measured, the level of the water in the Haileybury well. Those red arrows that you see there are days on which it is known that the pumping at the Rye Common well ceased. Those happen to be Sundays. Those six arrows, you will see, under the red S's are Sundays. You will observe that on the Monday morning the water level in the Haileybury well has jumped up. The inference I draw from that is that it is affected by that cessation of pumping. You will find it has jumped up in each one of those cases. Then, if you will look under October and November you will see cases where it is not known so well when the New River Company's pumping station at Rye Common ceased. It is known that it ceased where the red arrows are shown, and in each of those cases again the water rushes up on Monday morning or the following days to a higher level.

(*Mr. Pember.*) Who knows it.

29,940. (*Mr. Pope.*) By whom is it known to have ceased?—The Haileybury authorities. They give me these dates as absolute dates at which the pumping ceased.

(*Mr. Pope.*) I should think they gave you the dates at which they found more water in the well, and then inferred the pumping ceased. They could not tell that the pumping had ceased.

29,941. (*Chairman.*) How did they ascertain that the pumping had ceased?—The way in which I can ascertain it is by watching the engines. How they ascertain the facts I do not know. But the Bursar of the College, who is a gentleman, tells me that he knows the pumping ceased on that day.

29,942. How have you ascertained that the pumping ceased? Have you in any of these cases ascertained, for yourself, that the pumping ceased?—No, I have it from the Bursar of the College.

29,943. (*Mr. Pember.*) You do not know how he gets it?—He has given me these records, I have simply plotted them for your information.

(*Lord Robert Cecil.*) This objection does not come very well from the New River Company, because they have consistently refused to give us all information on the subject.

(*Mr. Pope.*) You have got your grievance, but it does not make the fact any more reliable.

(*Lord Robert Cecil.*) I think it does. If you refuse to give any information to contradict it, the ordinary inference that any court would draw is it is because you cannot.

29,944. (*Chairman.*) Did they pump on Sundays?—In July and August they did not pump on Sundays. You see those red arrows.

29,945. (*Mr. Pember.*) How do you know that those red arrows are true?—I have already explained that the Bursar of the College tells me that they were not pumping on those particular days, and quite independently of the well he ascertained they were not pumping. That is what he told me.

29,946. (*Chairman.*) You know nothing about it yourself, you only vouch the Bursar?—I do.

29,947. (*Mr. Pember.*) You say he is a gentleman?—I do.

29,948. (*Chairman.*) I see that on one occasion there is both a Saturday and a Sunday when there was no pumping?—That is so; that is on the 9th July.

29,949. It is the Rye Common well that is the culprit in this case, is it?—Yes.

29,950. Where is Haileybury with reference to Rye Common—you say it is a mile and a half off?—It is in the bend.

29,951. I see it. Have you anything more to tell us about this Haileybury business?—Your Lordship will see a red line and a black line indicating the bottom of the well up to the beginning of August when it was lowered, and the present bottom of the well. You will observe that the level of the water during September, October, and November, very seldom rose above the level of the bottom of the well previous to August last.

29,952. What then?—Showing a general decline so long as that special pumping went on.

29,953. There was a decline all over England, was there not, in those months of last year?—Not to this extent, which was a greater extent than had ever occurred before.

(*Mr. Pember.*) Yet the pumping has not gone up, which is very funny.

(*Lord Robert Cecil.*) Yes it has.

(*Mr. Pember.*) I say it has not.

29,954. (*Chairman.*) Do you know at all what the pumping from the Rye Common well was during those months?—No, I do not.

29,955. (*Sir John Dorington.*) I see on the day before, when they began to deepen their well, there was a very large supply of water in the well after a Monday, that is after the 8th of August?—Yes.

29,956. (*Chairman.*) Why did they deepen their well when they had got all that water in it?—You see it only rose up on the Monday. If you look behind that you will see that on the previous Monday it had got to the same level, within a few inches, and then had gone down again. If you look at the whole piece you will see there is a gradual decline. It was getting very near the bottom of the well.

29,957. There is no record of what water was in the well between that 8th of August and some day in September?—No, because they were deepening the well.

29,958. Then, again, after they finished their deepening they found water above the old bottom of the well?—Just a little above the old bottom.

(*Lord Robert Cecil.*) It goes down below.

29,959. (*Major-General Scott.*) Have you any record with regard to the Haileybury well as to the rest level at different times, and in different years?—Yes, I think we have.

29,960. What do you deduce from your record, if you have one; what is the effect of it?—The effect upon my mind of that diagram is this—

29,961. I am not talking of the diagram; I asked you whether you had a record of the rest level of the Haileybury well at different periods?—Yes, and you shall have that within a very few minutes. I have one on the 7th May 1896; what I have there is 94·40 above ordnance datum against 82·90 which is the bottom of the well.

29,962. But the record would be of no use unless it continued for several years. Have you got such a record?—No, I have not got a continuous record from 1896.

29,963. (*Chairman.*) Have you examined wells that were far away from any possible influence of the New River Company's pumping in Hertfordshire?—I have examined a great number of wells throughout the whole district and it is impossible for me to say which are within the influence of the New River Company's wells and which are outside, excepting in this way that I believe the whole of the water in the body of the chalk is affected more or less by the pumping down the Lea Valley.

29,964. May I take it that all the wells you have examined in the county of Hertford fell and failed in the same way as this Haileybury well did?—Not to the same extent. I mean to say as regards depth, because they are in different positions, some being higher up the valley, and some lower down. There is one district of Aldbury where in August last there was not one well with any water in it in the whole village. That is in the north-west of the county.

29,965. (*Sir John Dorington.*) How far is that from any pumping station?—That is within 2 to 3 miles of two or three pumping stations—but not of this company.

29,966. (*Mr. Pember.*) Of which company?—The Chiltern Hills Water Company, Grand Junction Pumping Station, for the supply of their canal.

29,967. What do they take a day?—I cannot tell you off-hand.

29,968. (*Chairman.*) In fact we know from your evidence before Lord Balfour's Commission that you are in favour of the reservoir theory, not of the river theory?—I do not know how you are going to distinguish. I certainly do not admit that there is an

underground river flowing past the wells of the New River and the East London Pumping Stations and flowing away to waste into the Thames. I say that is perfectly impossible. There is a water gradient, a line of saturation right away down the valley of the Lea falling gradually into the depression under London. The slope of the water is also from the east towards that valley and any water that gets into that depression must flow down to the bottom of the depression. If there had been that large stream which has been suggested flowing into that depression, that depression would not have existed and could not be in existence. The quantity of water pumped out of that depression has been put—I think it has been mentioned some two years ago, as 10 million gallons. That is a very low estimate indeed and I am inclined to think it is three or four times that in London. If 60 or 70, or 80 million gallons had been flowing down the slope into that depression it would have filled up the depression instead of which the depression is getting larger and deeper every year.

29,969. (*Mr. Pember.*) I do not think anybody said it flowed under London: they said it flowed under Essex and went out to sea?—I should be very much astonished if anyone could show me either where it flowed through or where it flowed out into the sea.

29,970. You know that is very easily said—nobody can go underground and do it?—That is so: but I have been making surveys of that valley; and all the gradients slope in the way I have just described. There is no possibility, unless you can go right away under Essex, where the clay is very thick indeed, and there the gradients would not permit of the water flowing. To my mind this large stream of water is a myth altogether. Where does it come from and where does it go to? There is a line running from north to south of wells of the New River Company and of the East London Company. They all say this extraordinary stream passes their wells and they are intercepting it: that leads right away from Cheshunt downwards into the depression. If it leads right down into the depression it cannot have got out again.

29,971. (*Major-General Scott.*) Assuming that no rain fell for 20 years, and that there was no pumping, and that during the first year the water level in the chalk was at a certain level and you ascertained what the level was, in 20 years do you think that the level of the water in the chalk would be below what it was in the first year?—Without any rainfall?

29,972. Yes?—It is really a point I have not thought out, as to what would happen without rain for 20 years. It is rather a new thing.

29,973. You had better think it out then I think; what would happen to the water, would not the water level continually fall every year?—One would think so—I should.

29,974. Why would it fall?—Because it is being drawn upon.

29,975. No, I am supposing no draught at all?—and no rain.

29,976. No rain?—Then the basin would naturally hold the water.

29,977. You mean to say there would be no fall in the level of the water?—There is just this—we do not know—

29,978. Would there be no fall in the water level?—Yes, I think it would flatten out.

29,979. (*Chairman.*) Then the water must be going away somewhere?—It is going into the lower basin. We begin on a water level like that (*illustrating*). We get no rain, and we get no pumping; would not the water gradually find its own level in the chalk?

29,980. (*Major-General Scott.*) What is the ultimate level?—The level of the lowest overflow.

29,981. The level of the lowest overflow would be the sea level, would it not?—It would be the sea level.

29,982. Very well, then, you can call it the level of the sea?—Yes.

29,983. It must be going somewhere irrespective of the pumping?—I do not follow.

29,984. Why should pumping stop all this movement?—The pumping in the depression under London forms that depression, because the pumping is greater in quantity than the amount which percolates through the chalk under the clay.

Mr. U. A. Smith.

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Mr. U. A. Smith. 29,985. You admit that if there were no pumping and no rainfall the level in the chalk would be gradually falling?—Pardon me. I said that the question of the effect of the absence of rain for 20 years was a question I had never thought out. At first view, it certainly would seem that it was running to its own level. But these questions require a great deal of thought, and that is one, certainly, I have never faced.

After a short adjournment.

(Witness.) My Lord, may I answer Major-General Scott's last question to me? *(To Major-General Scott.)* When you put your question just before luncheon, the difficulty I felt was in seeing what would take place in the level of the mass of water upon a cessation of pumping for 20 years, and a cessation of rainfall for 20 years. I took friction into account, and capillary attraction into account, and I could not say then, and I can hardly say now, how long it would take the water to level down. Of course, it is perfectly clear that if the cessation were to take place such as you describe, the first thing that would happen would be that the depression under London would naturally fill up until it arrived at the overflow level into the Thames, and then, if there was further water to come down from the high lands, it would, of course, overflow into the Thames. But I cannot, certainly, even now see how long it would take for the water in the high lands to flatten down, governed as it is by the friction of an almost unknown quantity and capillary attraction.

29,986. *(Major-General Scott.)* But, you know, there are springs at the level of the sea, or nearly at the level of the sea; in almost every case where there is a porous stratum there are springs at the level of the sea, are there not?—Yes.

29,987. Or the level of the Thames if you like?—For instance, at Grays there is water held up.

29,988. They are springs, are they not?—Yes, they are springs. There is water held up on both sides of the Thames.

29,989. Very well; those springs go on running, do they not?—They do, I understand, but I have been told that they decrease in volume very much.

29,990. Perhaps they do, but would they not continue to run as long as there was any water behind them that had a rising gradient?—Yes, and if that water was high enough to overcome that friction.

29,991. *(Chairman.)* That is only a question of time, surely?—It is a question of time. Whether 20 years would be sufficient to lower the whole mass of water in the chalk to one level, I could not say.

29,992. *(Major-General Scott.)* Would there not be a tendency to do as I suggested—that is, for the whole of the water to subside to the level of the sea?—Yes, I think so, certainly.

29,993. *(Chairman.)* And to run off, somehow or other, into the sea?—If there was a sufficient supply behind it. You see, the rain has ceased.

29,994. If it were above the level of the sea to start with, it would go off in time into the sea?—Into the sea if there was sufficient to fill up the depression under London, and then to overflow.

29,995. *(Mr. Pember.)* If the depression was below sea level; but if the depression was not below sea level it would go down straight to the sea?—But the depression all round London is far below sea level.

29,996. Very well, that holds good, then?—Yes.

29,997. *(Major-General Scott.)* The inference of that is, that there is a translation of the water in the chalk down to the sea; whether you are pumping, or not, there is a translation of that large body of water down to the sea?—Towards the sea.

29,998. *(Sir John Dorington.)* It has been suggested to us that water escapes into the Thames where the chalk is exposed somewhere towards Erith?—Yes.

(Chairman.) At Purfleet too.

29,999. *(Sir John Dorington.)* Do you know anything about that?—I do not know, personally, about the quantity, but the levels of the line of saturation show that the water passing down the New River Company's wells and the East London Company's wells cannot flow out there, because it has got to a lower level, and it cannot rise again because it is not under pressure.

30,000. The water in the New River and the East London Companies' wells is below the level of the outcrop of the chalk in the districts I have mentioned?—Yes.

30,001. *(Chairman.)* To go on with your evidence: Not only have the wells in 1898 failed, but the rivers, I believe have failed in Hertfordshire?—In this sense: that they rose at a lower level and were smaller in volume.

30,002. That is true of the Ver, is it not?—Yes, and the Lea.

30,003. How far below its previous point did the River Ver rise in 1898?—Between half a mile and three-quarters.

30,004. How much do you say?—Between $\frac{1}{2}$ a mile and $\frac{3}{4}$ of a mile; I am giving you the distance between the two lowest points—the lowest point of 1891 and the lowest point of 1898.

30,005. How much did the River Lea rise below its previous point in 1898?—I can give you that generally. It was reported that in 1868 the river was very dry down to a certain point. The evidence as to that is very weak indeed, and there is only the memory of an old man to govern it—

30,006. *(Chairman.)* I did not ask you about that?—I must, pardon me one moment—If that were true, this year it was dry for nearly two miles lower than that point; if that evidence were not true, it is a greater number of miles. That is why I mentioned it.

30,007. How much below its point of rise in 1897 was it—do not let us go back to 1868, and to something that is not certain?—About four miles.

30,008. Do you mean to say that for four miles there was no river Lea at all?—Yes, and then I am taking an artificial head. I am taking the flow of the effluent water of the Luton sewage farm. If I were to take the spring head it would be lower still.

(Mr. Pember.) Surely he could not say that was pumping.

(Lord Robert Cecil.) Ycs; why not?

30,009. *(Chairman.)* How far above any well of any company was that?—12 miles.

30,010. Twelve miles above?—Yes, taking the London companies.

30,011. There are some other companies who have been wicked then?—The Luton people themselves pump water.

(Mr. Pember.) How much.

(Chairman.) I think really that Hertfordshire must settle its accounts with its own people without troubling us.

(Mr. Pember.) They are like Ishmael, their hand is against all mankind, Luton is in Bedfordshire.

30,012. *(Chairman.)* Has the same thing occurred with the rivers Mimram and Beane?—Yes, practically the same thing.

30,013. That seems to point to a universal lowering of the level in the chalk formation in the year 1898, quite independently of any pumping?—There is no doubt that the depression aggravates it. I am not going to say there would not have been lowering in 1898 without the pumping, I am perfectly satisfied there would; but the levels would not have been so low without the pumping.

30,014. Is there any way of putting a bridle into the mouth, so to speak, of those wicked pumpers? What is your view about control—

(Mr. Pember.) That is what I want. I want to see what he wants.

(Witness.) I think the very first thing we want to know is, what they do. That, it seems to me, is the most important point. Why should they keep it a matter of secret? It is not that we feel personally aggrieved, it is that we want the information for the good of the public.

30,015. *(Chairman.)* What information do you want? Do not make phrases, but tell us in detail what you want?—I suggest—(a) Any company proposing to construct a well in the basin of any river or stream, whether for permanent or temporary purposes, should be required, before commencing its construction, to fix in the bed of the river or stream, above and below the proposed site of well, a gauge, to measure the flow of

the water of such river or stream. The companies say that their pumping does not affect the rivers. We want a means of knowing, I was going to say, whether it does or does not, but I will say of proving the fact that it does affect the rivers. Then (b) During construction, and for ever after, to keep a daily record of the flow of the river or stream, as shown by the gauges. (c) Before commencing pumping from a new well, and after the same shall have been completed, it shall be allowed to stand for, I suggest, three months, so as to ascertain the rest level of the water in the well. That is so that we have a basis to work upon.

30,016. Do you mean that there is to be no water for the consumers in London for three months?—No, the water companies look forward, or are supposed to look forward, and they know years before what they will require; they go to Parliament and they get powers, and, under present circumstances, they expend several years' time in bringing these things to perfection, and if there is only an additional three months put upon that it cannot be a very serious matter.

30,017. It is three months from time to time, I understand you want?—Then I would suggest this—except in cases of emergency—

30,018. (Mr. Pember.) Would you mind reading it again, so that we may just see what it is, because we have not got before us the document from which you are reading?—I will give you a copy.

30,019. (Chairman.) Give it me please again; do not mind about copies?—(c) Before commencing pumping from a new well, after the same shall have been completed, it shall be allowed to stand for three months, so as to ascertain the rest level of the water in the well.

30,020. That is only once for all?—Once for all, never afterwards.

30,021. I beg your pardon, I understand now, go on, what else?—(d.) At all times after commencing or re-starting pumping to keep a record showing: (1.) The water level at commencing to pump. (2.) The number of hours pumped. (3.) Quantity of water raised. (4.) The lowest level to which the water is pumped. (e.) To make returns monthly to the water examiner, and to the clerk of the county council of the county in which any well or gauge is situate, giving the date recorded in accordance with (b) and (d). The Act should also provide that these regulations shall be binding on and be observed by existing companies, and that within six months from the passing of the Act all existing companies shall have completed any works necessary to give effect to the Act.

30,022. (Mr. H. W. Cripps.) Do you mean that you really want us to advise that such an Act of Parliament as that should be passed?—Yes. It is duplicating the advice given by the Royal Commission of 1892. They said the great difficulty they had found in obtaining information was due to these facts.

30,023. (Chairman.) You say this is the kind of information which is wanted?—Yes.

30,024. Supposing you have got all this information, and supposing you were able to show that the pumping withdrew water from the rivers of Hertfordshire and the wells in Hertfordshire, the water companies would be perfectly entitled to do it; what do you say to that?—You lay that down as a rule; I cannot say anything.

30,025. Is not it manifest, is that not the law?—The common law no doubt enables them to take water as they like from underground sources.

30,026. You want to alter the common law?—We do not think it is fair to us.

30,027. Very good. As the law stands all this information would not enable you to stop the companies for a single instant; you could not bring an action; you could do nothing?—I do not know; I am not prepared to discuss the law with your Lordship; but it seems to me, having regard to the action between Dickenson and the Grand Junction Canal Company, it having been proved to the satisfaction of the Court of Chancery that the pumping did affect the water above ground, we are enabled to get a remedy.

30,028. (Mr. Balfour Browne.) Only if it has got into a defined channel?—In that case they proved that it was taken out of a defined channel.

30,029. (Chairman.) It seems to me that the control you are suggesting to us as expedient is simply in order to give you the means of founding a case by

which you can apply for an alteration of the law?—Possibly.

(Chairman.) Because as the law stands, all this information would not be of the slightest use if you got it, and if it showed in the clearest way that the streams and the wells were being depleted it would not help you in the least; it would be information wasted, therefore.

(Lord Robert Cecil.) It would help, if I might be permitted to point out, of course, in any future proceedings in Parliament by the company.

(Mr. Pope.) That is what my Lord is saying.

(Lord Robert Cecil.) It would also be a basis for a change in the law.

(Mr. Pember.) The future proceedings in Parliament being a request to alter the law.

(Lord Robert Cecil.) No, it would mean that when the companies come for fresh powers the county council could move in the matter. The county council, as your Lordship sees, is now empowered by the Standing Orders of both Houses to appear against them, showing that the Houses of Parliament have, both of them, recognised that we have an interest in this underground water.

(Mr. Pope.) It is for an alteration of the law.

(Major-General Scott.) If it is proved that the Lea was depleted by pumping, would that be a ground of action?

(Lord Robert Cecil.) I should not like to say; I do not think the point has ever been finally decided.

(Mr. Balfour Browne.) It was decided in "Willard v. The Eastbourne Waterworks" the other day by two judges of the first instance, where the river in the Filchen Glen was proved and found in that case to be depleted by water taken by the Eastbourne Water Company, but it was taken while the water was underground and in an undefined channel, and no action lay.

(Lord Robert Cecil.) That was my impression.

(Chairman.) Surely that is not the sort of control we are asked to advise about. This is a control that would not result if you had got all this information in the slightest action or in the slightest alteration of what the water companies are doing.

(Lord Robert Cecil.) My Lord, this is only a part of a general scheme which embraces an alteration of the law. Of course, no control could be of any use unless it alters the law. That is evident. If the law is sufficient you do not want any control; if you do want any control you must alter the law.

(Mr. Pember.) Not in all cases. That is what my Lord said.

(Lord Robert Cecil.) In all cases you must get more control by an alteration of the law.

(Chairman.) I have nothing else to ask Mr. Urban Smith.

(Mr. Pope.) My Lord, I shall resist temptation.

Cross-examined by Mr. PEMBER.

30,030. I should like to ask you whether you know the flow of the Lea for the three dry months of 1898?—No, we have not it in monthly statements.

(Mr. Pember.) Just let me give it to you: it has been proved already. It is 35,685,000 for July, 29,079,000 for August, and 24,705,000 for September.

(Chairman.) Is that right? Mr. Corble gave us the figures.

(Mr. Pember.) I think you will find that right, my Lord.

(Chairman.) Are those Mr. Corble's figures?

(Mr. Pember.) That is, of course, without the company's takings.

(Chairman.) The only gaugings are at Fielde's Weir, which is after the New River has taken.

(Mr. Pope.) It is the measurement at Fielde's Weir after the New River has taken.

(Witness.) Would you kindly give me those figures again? I will check them against my own.

30,031. (Mr. Pember.) In July 35,685,000?—No; that is adding what is taken by the water company.

Mr. U. A. Smith.

13 Mar. '99

Mr. U. A.
Smith.
18 Mar.'99

30,032. It is what passes Fielde's Weir?—The figure for Fielde's Weir is much less; that is the measured flow. If you take the natural flow—

30,033. It is the natural flow?—The natural flow is adding the 22½ million gallons.

30,034. Very well; give me that?—85·5 million gallons.

30,035. I suppose that is in the rough. I have got 35,685,000?—Yes, it is practically the same.

(Chairman.) For what year?

(Mr. Pember.) 1898.

(Witness.) Then August 29,000,000.

(Mr. Pember.) I have it 29,079,000.

(Chairman.) For 1898 the mean was 22½ millions only.

30,036. (Mr. Pember.) This is the natural flow I am giving you my Lord. (To the witness) August 29,079,300; there we agree; your decimal comes so near mine that we need not quarrel about that?—And in September 24 millions.

30,037. That ought to be 24·7?—24·6 I have it.

30,038. It is not worth fighting about?—No.

30,039. I just want another figure from you. Is the drainage area of the Lea 422 square miles?—Yes, I take it so.

30,040. Just let me ask you—the figures have been given before—whether you know what the flow of the Thames was in July 1898? I can give it you, because it has been proved, it is about 317½ millions, as nearly as possible—317,432,000, to be accurate—for August 272 millions, and for September 213,886,000?—Yes, I have taken the millions.

32,041. I think you would agree with me, would you not, that the rainfall of the Thames is rather larger than the rainfall of the Lea?—I believe it is.

30,042. By a couple of inches and, of course, gets larger as it goes westward. If that is the case, would you not expect to find that the flow of the Thames, especially as the condition of the Lea is aggravated, you say, by pumping, was more proportionately than the flow of the Lea?—The decline or the flow.

30,043. The flow; if you have got a better rainfall and no pumping you would expect, square mile for square mile, that the flow of the Thames would be greater than the flow of the Lea, would you not?—It depends very much upon the soil upon which the rain falls.

30,044. I daresay it does to some extent, but other things being equal, you would expect that, would you not?—If I understand you rightly, you mean this, that we should expect that the decline in the flow of the Lea would be greater than the decline in the flow of the Thames.

30,045. Quite so: and you would expect a little more than that, would you not, unless there was some great difference, as you say, in the substrata you would expect that per square mile the flow of the Thames would be better than the flow of the Lea, absolutely better per square mile?—No, I do not know that. I will admit your first proposition.

30,046. Why not the second?—It depends very much upon the soil off which the water runs.

30,047. I have told you that. I said unless there is some very serious difference in the porosity of the substrata you would expect that the flow per square mile of the Thames would be better than the flow per square mile of the Lea?—If the rain falls in the same way, you know, yes.

30,048. As a matter of fact, assuming, therefore, that there is not something to be taken into consideration, what do you say to this: the flow for July of the Lea works out per thousand acres on the figures I have given you at 132 thousand odd; for August it works out at 107 thousand odd?—Is that per square mile?

(Mr. Balfour Browne.) Per thousand acres.

(Mr. Pember.) Per thousand acres, and for September it works out to 91,000. When I come to the Thames I find the Thames for July works out at 131 thousand, for August at 112 thousand, and for September at 88 thousand.

(Chairman.) I am not able to follow you in the least; what do those figures mean?

(Mr. Pember.) Those figures mean this—perhaps I was rash to attempt to make any deduction, but the result is this: That per thousand acres the flow of the River Lea in the months of July and September was larger than the flow of the Thames for 1898, per thousand acres.

(Sir John Dorington.) With the same rainfall —

(Mr. Pember.) With a better rainfall.

(Sir John Dorington.) With the same rainfall the Lea maintains its flow better than the Thames.

(Mr. Pope.) Notwithstanding the pumping.

(Mr. Pember.) Yes, notwithstanding the pumping.

(Lord Robert Cecil.) There has been no statement of the amount of rainfall for those three months at all; you have only given the average rainfall, generally speaking.

(Mr. Pember.) I am quite aware of that.

(Lord Robert Cecil.) Nor have you told us how it falls; it may fall in showers, or it may fall in one great mass; that makes the greatest possible difference.

(Mr. Pember.) Of course I need not tell you that the extent of the flow of a great river like the Thames does not depend on the rainfall of the particular months of the year, which we are talking of; it depends on the antecedent rainfall.

(Chairman.) What puzzles me is that you have already given us the gaugings of the Thames and of the Lea, and now you give us a set of figures which I understand are the result of what 1,000 acres might produce with a given rainfall.

(Mr. Pember.) Did produce.

(Mr. Balfour Browne.) It is only spreading the gaugings over the acres.

(Mr. Pope.) It is dividing the gaugings by a certain number of acres.

(Chairman.) One at a time, please.

(Mr. Pember.) Let me do one month and one river; that is quite enough for you. Take the River Lea in July; for the total 422 square miles—

(Chairman.) That is, the 422 square miles are the whole basin of the Lea.

(Mr. Pember.) Yes, the flow was 35,685,000 gallons: that was the whole flow.

(Major-General Scott.) For the whole basin, Mr. Pember, surely not.

(Mr. Pember.) For the whole basin, that is the flow of the Lea. Now if you divide that up and see how much that 35,685,000 over the 422 square miles, which is 270,000 acres, means per 1,000 acres, you will find it is 132,000.

(Chairman.) I beg your pardon.

30,049. (Mr. Pember.) I did it; it is very easy for me who had the figures before me and could do it, to understand it at once, but it is not so easy for those who do not. (To the witness.) Now against that the corresponding figure for the Thames with all its advantages and rainfall, and without the disadvantages of pumping was only 131,000?—That is it.

Re-examined by Lord ROBERT CECIL.

30,050. I do not know whether it is necessary to put it to you, but that does not tell you what rainfall there was during those months, or during the previous months, or what proportion of the Thames Valley is porous compared to the proportion of the Lea Valley?—No.

(Lord Robert Cecil.) I should have thought it had nothing whatever to do with the Inquiry.

(Mr. Pember.) You might have thought so and I am not going to argue the case now, but I am comparing like with like and I am supposing the rainfalls are the same.

(Lord Robert Cecil.) There is no evidence that they are the same at all.

(Mr. Pember.) If you are going to suppose Providence made them differ in those particular months, then they are not the same.

The witness withdrew.

Mr. BALDWIN LATHAM called and examined.

Mr. B.
Latham.

13 Mar.'99

30,051. (*Chairman.*) You are a civil engineer and a Member of the Institution of Civil Engineers?—Yes.

30,052. A Member of the Institution of Mechanical Engineers, a Fellow of the Geological Society, past President and Member of the Council of the Royal Meteorological Society, Fellow of the Royal Statistical Society, Fellow and Member of the Council of the Sanitary Institute, and other societies?—Yes.

30,053. You have been in practice for 30 years as a sanitary and waterworks engineer?—Yes.

30,054. And have had much experience of water questions?—Yes.

30,055. You know what the reference to us, is?—Yes.

30,056. As I understand, you view it as important that we should consider what capital will have to be raised and expended in order to maintain a sufficient water supply in the near future?—That is so.

30,057. The experience of the past year has satisfied you, I suppose, that in order to maintain even the existing supply from the Thames and the Lea, considerable storage must be provided?—That is so, especially with regard to the Lea, to which I have directed my attention.

30,058. We have had, you know, estimates from Mr. Middleton and from Sir Alexander Binnie, putting the necessary storage to get the present supply from the Lea in a year like 1898, at something over 5,000,000,000 gallons; do you dissent from those estimates?—The estimate which I made for the last Royal Commission was something like—

30,059. We are not going back to the last Royal Commission; we are only going back to what the conditions of 1898 will make necessary?—Exactly; but I was going to point out, that I have pointed out that it required 5,600,000,000 gallons storage to supply 70 million gallons a day of water from the Lea and the 30 million gallons of underground water from the Lea, making 100 million gallons a day. In my judgment they require something beyond that now.

30,060. Where do you get 70 millions from the Lea; what Lord Balfour's Commission specified was 52 millions, was it not?—That was the figure which I arrived at.

30,061. Do not let us, please, go off to some hypothetical figure?—It is not at all a hypothetical figure; it is a figure which I arrived at after full consideration of the whole of the gaugings of the Lea.

30,062. It happens not to be in accordance with the fact?—It is in accordance with the fact.

30,063. There are not 70 millions drawn from the Lea now?—I beg your pardon. I said the available supply was 70 millions, and 30 millions from the springs, making 100 millions.

30,064. I am not asking you the available supply; what I asked you was, if you would kindly answer the question, whether you saw any reason to dissent from the estimates of Mr. Middleton and Sir Alexander Binnie as to the storage that would be necessary to get the present supply from the Lea in a year like 1898?—As I have already said, I came to the conclusion years ago now as to what was required to be done, and I have not seen the estimates of Sir Alexander Binnie or of Mr. Middleton.

30,065. Have you made any estimates of what storage would be necessary for that purpose?—I say at least six "thousand million" gallons.

30,066. Have you got your estimate in detail?—I have supplied it before—to the last Royal Commission.

30,067. The last Royal Commission did not know what the conditions of 1898 were?—But I took the conditions of 1864 which were almost identical with that, or rather were lower in water than those of 1898.

30,068. Then you refer to your evidence before Lord Balfour's Commission do you?—Certainly.

30,069. Then I will not trouble you any further?—The particulars were all put in how it was arrived at.

30,070. Have you got the figures of the present yield of the River Lea?—I have the whole of the original gaugings of the River Lea from the earliest period up to a certain point, and they have been kept up-to-date—

partly from the returns during the later few years of the water examiner.

30,071. Do those agree with what Mr. Corble gave us?—I did not see Mr. Corble's figures.

30,072. I really will not put in another table of the gaugings of the River Lea, if the witness will not take the trouble to see what has been put in. What have you got to say about the River Lea and the wells; have you come to the limit or what, as to what water can be got from them?—They came to more than the limit last year.

30,073. Not to more than the limit, because it was got?—Yes, because you could not keep the supply up which you required from the River Lea.

30,074. I do not quite understand you; what do you mean?—I mean to say this, that the New River and the East London Companies together required more water than the River Lea would supply last year.

30,075. That may be true enough, and for that reason it is suggested, of course, that large storage works are necessary?—They are absolutely essential—to a very much larger extent than have ever been yet provided.

30,076. We are all agreed upon that; if you have got anything to add upon that subject I shall be very happy to hear it?—I pointed out what the storage required was for 1864, which was a similar year to that of 1898, there being in 1898 rather a larger quantity of water flowing down the Lea than in 1864, as shown by the gaugings.

30,077. I decline to put in any gaugings, if you will not take the trouble to see whether they are the same as what we have already had?—I have not seen your gaugings.

30,078. I am sorry you did not take the trouble to see them?—I cannot take the trouble if I am not supplied with them.

(*Chairman.*) Really, Lord Robert, I am quite unable to pick out in this statement of the witness's evidence, anything which is material, but if you can suggest anything to me I will ask it.

(*Lord Robert Cecil.*) We have taken the view that it is our duty to present to your Lordship the evidence that the witnesses are prepared to give, and we have understood that your Lordship preferred to take the evidence yourself.

(*Chairman.*) Yes, but I cannot see anything here. It seems to me to be all either controverting what Lord Balfour's Commission found, or suggesting some inquiry into the depletion of the wells and rivers in Hertfordshire by the pumping of these companies, which is really beyond our province.

(*Lord Robert Cecil.*) Of course, we are in a great difficulty as to that. We never have appreciated what line the Commission is prepared to take on that question.

(*Chairman.*) We have no reference whatever to us on that subject.

(*Lord Robert Cecil.*) Of course, the difficulty is—I trust your Lordship will not think I am in any way disrespectful in answering your Lordship's question.

(*Chairman.*) On the contrary, I want you to tell me how this is material.

(*Lord Robert Cecil.*) The point, of course, is this—we have understood, from the course the inquiry has taken before your Lordship, that the Commission thought it very material to inquire, for instance, how far the Thames was an available source of supply—how soon, that is to say, it would be necessary to desert the Thames, and go to Wales, if at all; and for that purpose a great deal of time has been devoted to inquiries as to whether it is safe to leave so much in the Thames, and how much may be taken from the Thames, and how many gallons per head will be required for the supply of the consumers, and so on—all questions which were unquestionably before the Balfour Commission. Similarly, when you come to the valley of the Lea, it has appeared to us to be equally material—subject to your Lordship's ruling, of course—to show that the limit of available supply from the Lea has been reached; and that all this pumping from wells is really drawing on the capital—it is not taking what is flowing on the surface, but is drawing from the sources.

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(*Chairman.*) All that we shall require to know is that we can get from the Lea 52½ million gallons, and from wells in the Lea Valley 40 million gallons; that is what Lord Balfour's Commission found, and we do not propose to go beyond that.

(*Lord Robert Cecil.*) Very well, my Lord.

30,079. (*Chairman, to Witness.*) Do you say that you cannot get 40 million gallons from wells in the Lea Valley?—You can get it, but only at the expense of the river.

30,080. What facts have you now to show that?—Very clearly by comparing the gaugings of 1864 with the gaugings for the present year. In 1864, which was really a low-water year, the quantity of water passing over Fielde's Weir was something like 17 million gallons a day; whereas this year, if you deduct the water which would have been taken by the New River, it is only 2 million gallons a day.

30,081. Stop a minute; there you put figures upon me?—Yes.

30,082. Yes, but I am looking for somebody else's figures. What do you say was the quantity passing over Fielde's Weir in 1864?—17,208,000 gallons a day in August 1864.

30,083. Where do you get that figure from?—From the actual gaugings which are in my own possession—the original gaugings.

30,084. The secretary to the Lea Conservancy told us he had not got the gaugings for that year?—But I have them.

30,085. I see—you know more about the Lea than the secretary of the Conservancy?—I have got the whole of the gaugings for many years—the whole of the original documents.

30,086. (*Mr. Pember.*) Who took them?—They were left to me by the late Mr. Greaves, the engineer of the East London Company when he died.

30,087. (*Chairman.*) What do you say the mean for 1864 was?—In August 1864 it was 17,208,000 gallons per day.

30,088. (*Mr. Fope.*) Passing Fielde's Weir, I understand?—Yes.

30,089. (*Chairman.*) You gave us August; what was the mean for the year, or the lowest for the year, perhaps, first?—I have not got the whole of the details here. The lowest was August, and the mean was 41,900,000.

(*Sir George Bruce.*) Do you mean that that was the mean in August?

30,090. (*Major-General Scott.*) Or in 1864?—In 1864.

30,091. (*Chairman.*) That is the mean of the whole year?—The mean of the whole year was 41,900,000.

30,092. Now, what is it you want to contrast with that?—The maximum which you asked for was 150 millions in March, and the minimum was 17 millions, the figure which I have given you for August.

30,093. (*Mr. Pember.*) Would you mind giving us September and October?—September, 21,900,000, October, 18,300,000.

30,094. All in 1864?—Yes.

30,095. (*Major-General Scott.*) Do those figures include the quantities taken by the New River?—No, they do not.

30,096. (*Chairman.*) That is the flow over Fielde's Weir?—It is the actual flow over Fielde's Weir. I can give you the quantity taken by the New River.

30,097. I do not think we will trouble you about that: what you say is, you are going to contrast those with the flow in 1898?—Yes.

30,098. Maximum, minimum, and mean, please?—In 1898 the average was 21,360,000 gallons.

30,099. Here I have got Mr. Corble's table to confront you with; he said it was 22½ millions; you cannot both be right?—Those are from the Water Examiner's Reports.

30,100. What are?—These figures I have just given you for 1898. It is a printed document which they are taken from.

(*Chairman.*) It really is most provoking that one cannot get two scientific witnesses to agree upon a simple matter like this.

(*Lord Robert Cecil.*) I think the explanation may be that Mr. Latham does not appear to have taken in December—I do not know upon what ground.

(*Witness.*) I beg your pardon, December has not been taken in, that is quite right, and it is because this was prepared before December. My figures are for 11 months of the year.

30,101. (*Chairman.*) Forgive me for saying, that for a Water Engineer is a matter?—This was prepared before the December figures were out.

30,102. For 1898, therefore, minus December, you make your mean 21,360,000 gallons?—Yes.

30,103. (*Major-General Scott.*) Will it assist you to have the discharge in December?—Yes.

30,104. The discharge in December over Fielde's Weir was 37·7 millions?—That will just about bring it up to the same thing.

30,105. (*Chairman.*) What is your maximum for 1898?—The maximum for 1898 was in January—41,100,000.

30,106. That will not do — my maximum is 198½ million gallons?—That may have been one maximum for one day; this is the maximum for a month.

30,107. (*Sir George Bruce.*) That is the average maximum for a month you say?—Yes.

30,108. It is not the actual maximum of any month?—No.

(*Mr. Balfour Browne.*) 198½ millions is for one day, as you say, my Lord.

30,109. (*Mr. Pember.*) What were your maxima and minima that you gave us for 1864—were they for days or months?—For the months.

30,110. (*Chairman.*) Now your minimum for 1898?—The minimum was 8,200,000, from which you must deduct 6,130,000, which was sent down by the New River Company, and paid for by the East London so as to compare it with 1864 when nothing was sent down, the whole of the water having been taken by the New River.

30,111. What conclusion do you want us to draw from this?—The conclusion to draw from it is that here in two years, almost similar with regard to almost all the observations of the neighbourhood, in one case you have only got a surplus of two million gallons a day (in 1898) flowing over the weir, while in 1864 you have 17 million gallons a day.

30,112. (*Mr. Pember.*) What were the New River taking in 1864, do you know?—In 1864 they were taking 22½ million gallons—the full supply.

30,113. (*Chairman.*) Inference—storage wanted?—The inference is that this extreme low water is brought about by the excessive pumping.

30,114. That you have not given us the slightest proof of at present. Show us that that failure in 1898 was due to excessive pumping and not to the dryness of the season?—It is due, of course, to both causes, the dryness of the season being one.

30,115. What have you to show that it is due to pumping?—For the simple reason that the two years were actually alike with regard to dryness, except that 1864 was rather dryer, but in 1864 you had 17 millions surplus going over the weir as against two millions in 1898 while in that year they were only pumping 540,000 gallons a day, and in this year, 1898, the two companies were pumping 36 million gallons a day.

30,116. Do you suggest that pumping miles below Fielde's Weir affects the flow over Fielde's Weir?—Certainly I do.

30,117. Then it is that general fact, is it, that 1864 was a dry year, as dry as 1898?—Dryer than 1898.

30,118. But there was less pumping?—Less pumping.

30,119. More went over Fielde's Weir in 1864 than in 1898?—Yes.

30,120. The difference therefore is due to pumping?—Yes, that is so.

30,121. What was the rainfall in 1864—you have not considered the rainfall perhaps?—I have got all the tables somewhere.

30,122. I mean have you considered it in your comparison of these two years?—Yes I did. 1864 was an extremely dry year. I have not only considered

that but the percolation as well, which is a very much more important point.

30,123. The percolation to some extent depends upon the rainfall, does it not?—It is much more reliable to know the state of the springs percolation than the rainfall.

30,124. You cannot get any percolation unless you have first got your rainfall?—Yes, but then you may have very heavy rain in summer time which has no effect at all upon percolation or the springs.

30,125. How can you estimate percolation except by the rainfall, treating it as a certain proportion of the rainfall?—You cannot estimate it and that is the reason you cannot estimate the value of springs from the rainfall. It entirely depends upon the period of the year when the rain falls how much is likely to go into the ground, summer rains give very little indeed.

(*Mr. Pember.*) Would you mind giving us the rainfall for 1898 according to you.

(*Chairman.*) I have asked for the rainfall for 1864, and I have not been able to get it.

(*Mr. Pember.*) I have got that and I should like the rainfall for 1898.

(*Chairman.*) I have not got it yet, he has not given us the rainfall for 1864.

(*Witness.*) The rainfall for 1864 I have got—16·96.

(*Sir John Dorington.*) I have it here 16·74.

30,126. (*Chairman.*) Where was your figure got from?—A record taken at Nash Mills by Sir John Evans.

30,127. That is in Hertfordshire somewhere?—Yes, it is taken there because the percolation in the same year is taken there.

30,128. Now give us the rainfall in 1898?—19·13 at the same place.

(*Sir John Dorington.*) I have it here 14·75.

30,129. (*Chairman.*) Are you sure of your figure?—It is 19·13 at the same place.

30,130. You have not got observations elsewhere, have you?—I have any number of observations at different places. I have got the Hertfordshire rainfall as supplied by Mr. Hopkinson.

30,131. That shows very different results to what we had from Greenwich?—There are no percolation experiments going on at Greenwich.

30,132. We will first finish with the rainfall before we go to the percolation, please. Have you got your Hertfordshire rainfall by Mr. Hopkinson in 1864 and in 1898; if you have not, please do not keep us all night?—In 1864—

30,133. You have not got it?—I have not got it.

30,134. Then we will not trouble you any more about it. How do you estimate your percolation?—We do not estimate it, we measure it.

30,135. How do you measure it?—A percolation gauge consists of a section of soil put into a watertight tank. My own percolation gauges have about one yard cube of material put into them, and alongside them we have a rain gauge. I have at Croydon now working a section cut out of the chalk downs, which represents the percolation through chalk—the amount of water which passes into the ground. I have also a section cut out of the valleys which are generally filled with gravel—valley gravel, and along side this there is a rain gauge. Every day the quantities of water which fall in the shape of rain or of percolation are both of them measured, so that we are able to compare the quantity of rain which falls and how much percolation, and to know when percolation starts and when it stops.

30,136. Have you got percolation measurements for 1864 and 1898?—In 1864, my gauges were not working then; mine have been working for about 20 years.

30,137. Whose gaugings are you going to give us?—These are Sir John Evans's—or Dickinson and Company's at that time, as it was. The percolation in 1864 at Nash Mills was 2·88 inches out of a rainfall of 16·96. In 1898 the rainfall was 19·13 inches, and the percolation was 3·62. The percolation is as variable a quantity as it is possible to be—even more variable than the rainfall itself.

30,138. (*Sir John Dorington.*) I suppose that depends a good deal on temperature, does it not?—It depends

on temperature to some extent, but mostly upon the period of the year when the rain falls. If heavy rains occur in the winter months you get a very much larger percentage passing into the ground than you do if rains occur in the summer months.

30,139. (*Major-General Scott.*) Can you give us for those two years the proportion of rainfall in the winter months and in the summer months?—They have not been separated. I could tell you what they are at my own house, if you like to take them down for Croydon.

30,140. No; I think we want them at Nash Mills, if they are made out?—There was no percolation for a part of last year—all during the summer of last year. Percolation only commenced in 1897 at the end of the year in December, and it went on to June, and then it stopped.

30,141. It went on to June 1898, did it?—Yes, but it was a very small quantity indeed, and did not differ very much from the Nash Mills one.

30,142. Can you give us what it was in the interval?—Between December 1897 and the end of June 1898, 3·66 was the percolation on my own gauge.

30,143. You have no comparison with that in 1864?—Not in 1864, because we did not begin the gauges till 1878.

30,144. (*Chairman.*) You have got a table comparing the flow of the Lea in 1864 and 1898; I have not the slightest idea what inference is to be drawn from it or what the use of it is. I do not know whether you wish to put it in; it conveys nothing to my mind. Will you please tell us what it means?—It is simply to show what I have already mentioned, that 1864 with regard to the whole meteorological conditions was a very much drier year than 1898, when the actual gaugings showed that the River Lea had been enormously reduced beyond what it ought to have been.

30,145. Perhaps you had better put in that table?—Yes. (*Witness handed in Table. See Appendix K, 3.*)

30,145a. You have now put that in?—Yes; I should like to say, with regard to the table which you say is not to go in, that it is the only complete table of the gaugings of the Lea that is extant, and nobody has the figures to make them up except myself.

30,146. Upon what authority do you give these figures?—I have already pointed out to you that I came into possession of the original gaugings of the Lea. The River Lea gaugings altogether broke down at one period, owing to the death of the look-keeper, who took them. During that period I was able to interpolate the gaugings so as to complete the whole record with them. There is no other record of the Lea gaugings that is complete except this table. In the others there are numbers of years missing.

30,147. But you did not begin to take the gaugings in 1850?—No.

30,148. Who did?—I had the actual gaugings bequeathed to me, as I have said.

30,149. Bequeathed to you by whom?—By Mr. Greaves, the late engineer of the East London Company. He collected an enormous number of documents, all of which came into my hands on his death, and amongst them were the original gaugings of the River Lea.

30,150. (*Sir John Dorington.*) The East London Company are not in possession of them, are they?—No, he had collected them in his own private capacity, together with an enormous number of other papers.

30,151. (*Mr. Pember.*) When did he die?—I forget now.

30,152. (*Chairman.*) Are any of those gaugings of the River Lea your own work?—Many of them. Those in which there has been a blank have been interpolated from my own work running parallel with it so as to make them up correctly.

30,153. How did you get access to the gauges at Fieles Weir so as to take the gaugings?—I have not had the access, but with the assistance of the late Mr. Greaves I was able to interpolate the places where there was a discrepancy, by having parallel gaugings carried on in another watershed of a similar character.

30,154. What do you mean by another watershed of a similar character?—I mean to say that there are two or three months deficient; to make all the years complete, and in order to make those years complete, I was

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able to compare all the parallel gaugings in another watershed.

30,155. What watershed?—The watershed of the Wandle.

30,156. Do you assume that the Lea was varying as the Wandle varied?—We know it does, exactly.

30,157. Is that what you assumed?—We assumed that, yes.

30,158. What are the years that you filled up in that conjectural sort of way?—The years 1878 and 1879. This is the only complete gauging of the River Lea.

30,159. Those two years are interpolated by conjecture and comparison?—Yes.

30,160. Can you say which years are taken from actual gaugings?—The whole of the years except those two.

30,161. Except those two?—Yes.

30,162. Very well, now we will put in that table that we have been able to ascertain it. Could you, before you hand the table to the shorthand writer, put a note to those two years?—Yes, my Lord, it shall be done. (*The Witness handed in Table. See Appendix K, 4.*)

30,163. (*Major-General Scott.*) In your table comparing 1864 with 1898 I observe, with regard to the year 1864, you include the daily quantity taken by the New River from wells?—Yes.

30,164. And in the table relating to 1898 you omit the quantity taken by the New River from wells?—Yes.

30,165. How can those two tables be compared?—I give you the quantity because it was only the quantity that was stated on the top. It is only 540,000 gallons per day from wells.

30,166. That would render the tables not precisely comparable?—It makes it a great deal more comparable, in the sense in which they are intended to be compared, because in the latter date you are taking something like 36 million gallons a day, and in 1864 it was only 540 thousand gallons a day.

30,167. You say in the first table the daily quantity taken by the New River is so many million gallons; then you give what is taken from wells and that is added to the discharge at Fielde's Weir and that is recorded in the table as the total discharge of the river; whereas in 1898 the whole of that well supply is omitted?—That is so.

30,168. It seems to me that that would vitiate the comparison?—It was omitted for good reasons.

30,169. (*Lord Robert Cecil.*) You have merely got to take 540,000 gallons from the 62.28 in the last column for 1864; that would, no doubt, make them strictly comparable, you ought to deduct 540,000 gallons from these; at least, I suppose you ought?—Yes, if you deduct 540,000 gallons, then it comes to the same thing. As the table now stands, it shows by contrast what an enormous difference there is between the two years, although the years themselves were very much alike, except that the dry year, 1864, gave more water than the year 1898 which was not so dry.

30,170. (*Chairman.*) Then in 1898 you left out December, which, of course, brought up the average of the year?—I can bring that up to date.

30,171. In the table that we have got before us you have not put it in?—Because the tables were prepared before December.

30,172. I know, but we are a long way after December now; you have not thought fit to bring your tables up to date?—I beg your pardon, I have brought them up.

30,173. Not in what I have got before me?—No. The total quantity for 1898 up to the end of December, instead of being 7,128 cubic feet, should be an average of 7,248 cubic feet.

30,174. Now you are going to cubic feet?—And the total flow of the river instead of being 64,152,000 should be 65,232,000 as the average daily supply—that is including December.

30,175. Those are totally different figures from what I have got on the table before me?—Yes, because you have got 11 months only. I could not put the last month in when it had not arrived at the time the table was prepared.

30,176. As I understand, you attribute this decline in the Lea in 1898, as compared with 1864, to pumping?—Entirely so.

30,177. How far below the present rise of the River Lea is the first pump of the New River Company—how many miles. You have not troubled your head perhaps to ascertain that?—Not in that way, but I do know where they all are.

30,178. If you do not know, please say so?—I have got the survey here. I should like to say that I have spent an enormous amount of time in the investigation of this question of underground water, and have had a complete survey made of the whole of Hertfordshire and Essex with reference to this matter. I have a map here with the level of all the underground waters of the whole of this district.

30,179. (*Sir George Bruce.*) Before Lord Balfour's Commission you gave evidence, and on page 274 in answer to Question 7536 you go on to say: "Now I show that the River Lea, with an adequate storage accommodation, taking into consideration the quantity of water which has come down in the years 1863, 1864, and 1865, which is the lowest water period known, and assuming that we begin with an empty reservoir, which would not be the case in any ordinary year, would supply 70 million gallons a day from surface sources totally independent of the water which had been flowing underground"—is that in accordance with the evidence you have given us to-day?—Certainly; but you must have the storage, and I put the underground flow at 30 millions. If these pumping stations are going to be carried on as they are, multiplying as they are, the underground flow will be enormously increased.

30,180. (*Chairman.*) Increased?—Increased; and therefore the river will be depleted. I put the maximum at 30 millions, which would be drawn from wells, but they have already been drawing 36 millions this last year.

30,181. (*Sir George Bruce.*) Do you still hold that you can get 70 millions a day from the Lea?—Yes, and 30 millions from underground sources.

(*Mr. Pember.*) That is more than the Balfour Commission said.

30,182. (*Sir George Bruce.*) That is more than the Balfour Commission gave?—That is so; but you are bound to have the reservoir storage room for it.

30,183. (*Major-General Scott.*) As it was from surface sources, no pumping would have any effect; the pumping only depletes the underground sources which come up in springs?—Pumping has an effect certainly of diminishing surface sources as well.

30,184. How does it do that?—Because it produces a general lowering of the whole of the underground water.

30,185. Do you mean it increases the percolation?—No, it does not increase the percolation; that is a function that is totally apart from the movement of the water when it gets into the ground; but it increases the inclination of the underground water towards particular points, and whenever you increase the inclination of underground water you increase the flow to these points.

30,186. But what has that got to do with the surface sources?—Simply because if the water is depressed and goes to the pumps it cannot rise to the higher level and appear in the rivers.

30,187. By surface waters I assumed that you meant the water flowing off the surface of the ground into the river?—I mean both the surface water which comes off the impermeable strata and also the chalk water which flows by springs into the river.

30,188. (*Chairman.*) If I understand you aright, you adhere to the view which you expressed before Lord Balfour's Commission, namely, that 30 million gallons a day can be got from underground water?—That is so.

30,189. And 70 million gallons a day with proper storage?—With proper storage.

30,190. From the River Lea?—That is so, but only by storage.

30,191. Everybody is agreed on that. I understand your present theory is that this pumping must not be extended, because it will first rob the Lea?—That is so most decidedly. If you exceed the 30 million gallons a day from all sources in pumping, the flow of the River Lea itself would be diminished.

30,192. So that it would practically be the New River Company robbing the Lea, if I may use a violent

word, by pumps, and therefore the East London Company not getting so much from the Lea as it ought to, and might?—That is exactly my view, that the New River Company pumps such an excessive quantity of water from the wells that they have depleted the river of water, and the East London Company have suffered, while the New River have actually sold that water afterwards to the East London, which they had taken from them the power of getting.

Cross-examined by Mr. PEMBER.

30,193. You have said, as I understood you, that something over 6,000 million gallons storage would be wanted for the 70 million gallons a day; have you considered what would be wanted for the 52½ million gallons of the Balfour Commission?—Something less, if that was the right quantity.

30,194. So I gather; at what figure should we put it?—I do not at all agree with the quantity of water with regard to underground water as put by the Balfour Commission.

30,195. I am not talking of underground water; what has that got to do with storage?—It has got everything to do with it.

30,196. I ask you what you want as storage for 52½ millions—what has that got to do with underground water?—It has got everything to do with it, because if you take more than the 30 million gallons a day you will diminish the surface flow to a very large extent.

30,197. Has that anything to do with the question I asked—

(Lord Robert Cecil.) Let him answer your question.

30,198. (Mr. Pember.) I only want to know what the storage is that you want for 52½ million gallons?—It will require to be more if you take that larger quantity from underground sources.

30,199. What amount of underground water did you calculate being taken when you put your 70 millions at so much storage?—Thirty million gallons.

30,200. Very well, cannot you do the same sum for me for 52½ millions?—It requires a great deal of working out to do it.

30,201. (Sir George Bruce.) You said on the same page that I was quoting from before: "In my judgment, at least 30 million gallons a day may be expected without difficulty"—that is from underground?—Yes.

30,202. You did not limit it to 30 million gallons; you said "At least 30 million gallons"—that is in answer to Question 5741?—That was 30 millions as the basis of the whole of the calculations.

Re-examined by Lord ROBERT CECIL.

30,203. I understand your evidence to be that you think 30 million gallons is the limit; you now say, whatever you may have said to the Balfour Commission, that 30 million gallons is the limit of what ought to be taken from underground sources?—That is if 70 million gallons are to be taken from the stream. If they are going to take 70 millions, and then the larger quantities from underground sources the river could not stand it, because all sources will only supply about 100 million gallons a day. A long period of gaugings of the River Lea shows that that is the average over a long period.

30,204. (Chairman.) Then if only 52 millions is taken from the stream that would leave over 40 millions to come from underground.

(Lord Robert Cecil.) I was just going to ask that.

(Witness.) That would be so.

(Lord Robert Cecil.) Then do you—

30,205. (Chairman.) Let him answer, please. (To the Witness.) "That would be so"?—That would be quite so, only you must have then a longer period for storage because you deplete the river at low water periods to a much greater extent by pumping that large quantity than at other periods.

30,206. (Lord Robert Cecil.) In the figure of 30 millions or 40 millions, whatever it may be, do you include not only what is taken by the two water companies, but also what is taken by all other water suppliers?—Yes; there is the question of the navigation to be kept up.

30,207. I am talking about what is taken from underground?—Certainly.

30,207a. Do you include in the 30 or 40 millions, not only the two water companies, but Hoddesdon, Ware, Hertford, and so on, who take water?—I include all the water for all purposes, including the water for the navigation.

(Chairman.) That is not from underground.

30,208. (Lord Robert Cecil.) Do you think considerable pumping under London has had any effect on the Hertfordshire sources?—Certainly.

30,208a. So that that would have to be estimated too?—Certainly. In 1878, I made a survey and pointed out then that there was a considerable quantity of water running underground from the Hertfordshire valley into the depression under London.

30,209. That all has to come from the sources of supply in the valley of the Lea?—It has. Part of the depression of course under London is supplied from other directions as well; it does not entirely come from the Lea.

30,209a. (Sir George Bruce.) You did not limit what the valley of the Lea can supply to that 100 million gallons, I think, because there is another answer of yours to the Balfour Commission: "the 70 million gallons" and the 30 million gallons in my judgment is a long "way within the limits available for the water supply" from the Lea alone?—There is a complication with regard to the Lea, and that is, that part of the Colne water comes to the Lea underground.

30,210. I see you base your calculations upon a rainfall which represents a depth of percolation of 5½ inches?—Yes, on the average, but there was less percolation last year than that, and in 1864 there was only half that quantity.

The witness withdrew.

30,210a. (Chairman.) We were promised a joint statement showing the statutory obligations of the London Water Companies and of consumers, and of the powers of the Local Government Board. Has that been settled.

(Mr. Freeman.) My Lord, that is practically settled. A few little suggestions have been made for making it still clearer; they are only questions of copying; but that is being done, and it will be in your Lordship's possession shortly.

30,211. (Mr. Pember.) I hope it will be finally printed to-night. I have also to tell you that another thing has been agreed which has been festering in my mind for a long time, and that is, that one of those little accusations made by Mr. Gomme about the Lambeth Company, I am happy to find that he and Mr. Wilkins have agreed. I will not read you the memorandum, but I will just hand it in. I think it may as well go on the notes, I am sorry to say. It has been agreed between Mr. Gomme and Mr. Wilkins, and I am happy to feel that it settles that point.

(Chairman.) Is it on the question of the excess capital?

(Mr. Pember.) Yes.

(The learned counsel handed in the following memorandum):—

MEMORANDUM drawn up by Mr. WILKINS and Mr. GOMME, 27th February 1899.

The capital expenditure up to 1848, according to the statement to be found on page 809 of the evidence of 1851, was read by Mr. Gomme to be 313,178*l.* 8*s.* 1*d.* This item Mr. Wilkins states should be 296,346*l.* 15*s.* 11*d.*, the difference being that the statement before the Committee of 1851 contained items of capital not expended (probably the balance of a sum borrowed from the Globe Insurance Company).

Mr. Wilkins states that it is quite clear from the returns and evidence given in connexion with the Lambeth Company's Bill of 1848 that the capital expenditure of the company at the end of 1847 stood at 296,346*l.* 15*s.* 11*d.* Starting with this 296,346*l.* 15*s.* 11*d.*, the expenditure reached 307,352*l.* 8*s.* 1*d.* at the end of 1849. This amount was given in evidence at Q. 12,632 of 1851, and Mr. Wilkins states it was evidently arrived at by leaving out the odd 15*s.* 11*d.* of the original amount, 296,346*l.* 15*s.* 11*d.*, and adding the new expenditure.

In 1854 the company in their accounts wrote off from capital expenditure 60,000*l.* (per Mr. Wilkins' printed account). This does not appear in any printed

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See 3792
4347-72;
4585-91;
27,077-
168;
27,449a-
56.

18 Mar.'99. evidence, and was, of course, unknown to Mr. Gomme (per Mr. Wilkins' answer to Q. 27,165).

The Act of 1848 stated the old capital at 226,000*l.*, and Mr. Gomme's suggestion is that the wording of the Act implies that this amount was allowed for works up to that date. Mr. Wilkins reads the Act differently. In respect of the 87,178*l.* 8*s.* 1*d.* (the original excess of capital expenditure up to the Act of 1848 suggested by Mr. Gomme in evidence) Mr. Wilkins shows that 60,000*l.* was written off by the company in 1854, and suggests that a further difference of 16,832*l.* is due to a misreading of the table put in in 1851. There is, therefore, left 10,346*l.* as the amount included in capital expenditure beyond the amount declared by the Act of 1848 to be the then existing capital of the company.

Whether this 10,346*l.* is rightly contained in the capital expenditure depends upon the reading of the Act, upon which Mr. Gomme and Mr. Wilkins do not agree.

Mr. Gomme, while agreeing that the foregoing statement of figures is the result of Mr. Wilkins' evidence, has, however, to observe that (1) the 60,000*l.* written off in 1854 does not probably refer wholly to capital which became annihilated prior to 1848, but partly at all events to capital which became annihilated consequent upon the Act of 1848 (although incurred prior to that date), and in that case would, therefore, to some extent not affect the 87,178*l.* 8*s.* 1*d.* but the 226,000*l.* capital declared by the Act of 1848; (2) that the misreading of the table put in by the company in 1851 is not apparent from anything stated in that table; (3) that the excess, whatever it is, is not in any way stated to be illegal but only to be in excess of the declared capital of the undertaking at the time of reconstruction of the company in 1848.

(Mr. Freeman.) I rather object to the term "accusation" because Mr. Gomme makes no accusations; it is only my friend's fiery way in advocacy.

(Chairman.) I understand Mr. Gomme's statements to be clearly in the form of accusations.

(Mr. Freeman.) No, my Lord.

(Mr. Pember.) You see I am not the only person who has been inaccurate, Mr. Freeman.

(Chairman.) Surely it was suggested, that for upwards of 40 years, an excessive amount had appeared in the capital accounts of the Company, upon which

dividends had been paid. I do not know what amounts to an accusation if that does not.

(Mr. Freeman.) I do not think that is the point.

30,211*a.* (Mr. Pember.) Yes it was, excuse me. There is one other statement if it would assist you in any way. You will recollect that you had Mr. Collins, the Engineer of the New River, back some time ago, to show you what they had been able, in some of their districts, to do with regard to reducing the amount of the supply. I then read—and you did not put me to the formal proof of it—something that had been done in the same way by one of the other companies, never mind which it was. Now I am able to do the same for the East London. In half a dozen of their districts they have been at work, and I think I can just tell you the result. Those districts respectively had an average per head of supply of 32, 38, 52, 20, 27 and 25. See 29,235-267.

(Chairman.) Gallons per head.

(Mr. Pember.) Yes; they have reduced the 32 to 26; the 38 to 26; the 52 to 38; the 20 to 13; the 27 to 22; and the 25 to 16. This might as well, while we are about it, be put upon the Notes.

(Chairman.) Certainly; those are very material figures it seems to me.

(Mr. Pember.) So it does to me.

(The learned counsel handed in statement. See Appendix, Q, 6.)

(Lord Robert Cecil.) For my own personal convenience I shall be glad to know whether the Commission desire that the very few observations that I shall ask leave to address to them, should be before or after the water companies. I am quite indifferent, only I should like to know.

(Mr. Pember.) I think we had better hear him in front of us, so that if there is anything to answer we may deal with it.

(Lord Robert Cecil.) That is an observation that cuts both ways.

(Mr. Cripps.) I think it would be more convenient if Lord Robert comes before.

(Lord Robert Cecil.) It makes no difference to me, I assure you, if it will make no difference to your Lordship.

(Chairman.) Very well, we will hear you to-morrow morning.

[Adjourned till to-morrow at 12 o'clock.]

SIXTIETH DAY.

Tuesday, March 14th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

SIR JOHN EDWARD DORINGTON, Bart., M.P.

SIR GEORGE BARCLAY BRUCE, Knt., O.F.

ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.

HENRY WILLIAM CRIFFS, Esq., Q.C.

ROBERT LEWIS, Esq.

CECIL OWEN, Esq., Secretary.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.

Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.

Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.

Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.

Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

14 Mar.'99. 30,212. (Chairman.) We have received this morning the agreed statement as to the statutory provisions with regard to control. It has been agreed to, I understand, on both sides.

(Mr. Pember.) As I understand, certainly, from a number of the companies. They have done it very carefully, and I have no doubt at all myself that it is correct. At the same time it so happens—but, perhaps,

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I ought to allow my learned friend, Mr. Pope, to say what it is.

(Mr. Pope.) All right, go on.

(Mr. Pember.) The New River Company have also drawn up a paper which contains only the Public Acts, and it differs from ours in the respect that ours contains all the Private Acts as well. I think it would not be at all a bad thing, my Lord, if you feel inclined to have it, that the New River statement should be handed in to you too, and then you will be able to have the thing in both shapes, which you will find convenient.

(Mr. Pope.) We do not in the least doubt the accuracy of the agreed statement, but Mr. Hollams has not had the opportunity of checking the reference to the numerous Private Acts of Parliament of the individual companies.

(Mr. Pember.) There are hundreds of them, and I think, if you have Mr. Hollams's paper too, and have that printed, it would be convenient.

(Chairman.) Very well.

(Mr. Pope.) Only if the agreed statement goes before your Lordship, Mr. Hollams must not be held hereafter

as having certified to the details of the various individual companies. There may be, I do not know, some control in the Private Acts.

(Chairman.) I understand, Mr. Cripps, you have agreed to this statement.

(Mr. H. L. Cripps.) Yes, my Lord, I think I may say so. I should just like to explain that some time ago we did, on behalf of the London County Council, have a statement of this kind prepared, and it was submitted to the Commission, but the water companies found themselves unable altogether to agree to it. I think it was a little, they thought, controversial, and they rather pressed for the use of their own statement. We have agreed to that, because there was more difficulty in the eight companies all altering a document than there was in our altering ours. Of course there are several matters of controversy involved in this statement, but I think for the present purpose Mr. Bonnor Maurice and I have given a great deal of attention to this matter, and we both think that substantially your Lordship will find there all that is necessary.

Mr. EDWARD ARTHUR BONNOR MAURICE called and examined.

30,213. (Mr. Pember.) Mr. Bonnor Maurice, will you hand in the memorandum which you have prepared, and do you say that to the best of your belief it is correct?—Yes, that is so. It is prepared, I understand, in accordance with what his Lordship's wishes were. It purports to give the obligations upon the companies and the means of enforcing them.

(The Witness handed in memorandum. See Appendix X, 2.)

30,214. (Major-General Scott.) I have some difficulty in referring you at once to the matters I wanted to ask you about in this agreed statement which you have now put in, for I made my notes on the one that the Commission received from the London County Council, and which has not been put in, so I will just refer to that statement, and you can turn to what you have in the new one which corresponds to it, if that would do?—If you please. I daresay I can answer your questions, I do not know.

30,215. My first question is with regard to an exemption from obligation to give constant supply in this contingency, which I will read to you: "No company shall be compelled to give constant supply to any premises in any district until the regulations provided for by this Act are made and are in operation within any such district, or if it could be shown by such company that at any time after the expiration of two months from the time of service of any requisition for constant supply, more than one-fifth of the premises in such district are not provided with the prescribed fittings, without prejudice nevertheless to any renewed requisition at any future period?"—You are reading from the 10th clause of the Metropolis Water Act, 1871.

30,216. Yes; it is in the County Council statement, under the head of "exemptions from obligation." I want to know if you can tell me whether a water company having once seen to the fittings, and having given constant supply, can at any future time withdraw that constant supply on the ground that more than one-fifth of the premises in that district are not provided with the prescribed fittings?—As I understand the section, it merely relates to the giving in the first instance of the constant supply. I recollect in the case of St. George's in the East, when constant supply was proposed to be given to them, the ordinary notices were served by the East London Waterworks Company, and shortly before the time for the giving of the supply, it was found that the fittings had not been provided to the extent of one-fifth; there was an inquiry before your predecessor, and the time was extended. So that I understand this to apply only to the initial case of the giving of constant supply.

30,217. Do you say that having once given the constant supply under the process provided for in that Act of 1871, the Company cannot withdraw constant supply on the plea that all the fittings are not as they should be?—I understand not.

30,218. They cannot?—That case has never arisen, but I should say that that was the meaning of the section in question.

30,219. I have it in my mind that something did arise with regard to Wimbledon on that particular point?—I do not remember that Wimbledon case. The only case which I do remember, which is at all analogous, is the one which happened in the case of the East London giving a constant supply to St. George's in the East for the first time, and that happened in the way in which I have indicated.

30,220. (Mr. H. L. Cripps.) This Act, the 1871 Act, would not apply to Wimbledon?—No, Wimbledon would be outside the metropolitan area. Of course, now it would be within.

30,221. (Major-General Scott.) It is now within by a special Act?—Yes, by the Act of 1897.

30,222. I think a case arose in Wimbledon—perhaps you will recollect it; I think it was taken notice of before Lord Balfour's Commission. A complaint was made by the local authority of Wimbledon to the effect that the constant supply was not maintained by the company which was supposed to give the constant supply, I think that was the Southwark and Vauxhall Company?—Yes, it would be.

30,223. I understand—I think it is in evidence before that Commission—that the Southwark and Vauxhall Company proposed to maintain that they were not in default for not giving a constant supply, because the fittings throughout that district, or one-fifth of them, were not what they should be under the Act of 1871?—I do not remember the individual case, but I think the answer would be this—that the Act did not include Wimbledon, and, therefore, the obligations with reference to fittings, both as to the company and upon the consumers, would not apply. Of course, now, as I say, since the last Act, Wimbledon would be included.

(Mr. Pope.) If Major-General Scott will allow me, I will inquire as soon as any of the Southwark and Vauxhall officials are here, as to the circumstances of the case, but my recollection of it is rather in the direction that Mr. Bonnor Maurice is suggesting—namely, that the Southwark and Vauxhall, having that statutory authority, place the Wimbledon district under constant supply, then the district having come within the metropolitan area, the question arose whether they must maintain that constant supply, and I suppose they would raise the defence that the one-fifth would have reference to their statutory obligation, which did not come into force until the extension of their district. I have not sufficient recollection to speak with any positiveness, and there is no Southwark and Vauxhall official here at the moment, but I will take care that the inquiry is made, and that the case is mentioned hereafter.

(Major-General Scott.) I think it is important, because if a company had that power of revising the question of constant supply in regard to a district which already had it, in would be an exceedingly inconvenient thing.

(Mr. Pope.) No doubt. I am quite clear myself that Mr. Bonnor Maurice's construction of the section is perfectly accurate—that the condition of exemption is once for all, and that having entered upon that constant supply it would be no defence for the company to say

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the one-fifth has not been maintained, and therefore we will not maintain the constant supply. But it might be that a point might arise that the district having been without the metropolitan area when the constant supply was undertaken, the provisions of Section 10 of the Metropolis Water Act only came into operation when they assumed constant supply under the provisions of the extension of the metropolitan area. There may have been something of that kind in it, but I will take care to inquire whether there is anything; I am, however, quite clear that Mr. Bonnor Maurice's construction is right.

(Mr. Pember.) I am quite sure that my learned friend must be right, especially if you look to the later clauses of the Act where there is a personal remedy against a defaulting householder given, which shows that after the notice is once given and once complied with, it is a question of penalty and not of revocation.

30,224. (Sir George Bruce.) There must be some power of that sort?—The 28th section of the Act of 1871, I think, shows that pretty clearly.

(Mr. Pember.) Look at clause 32 too, and clause 2 of 32 too. Clause 28 of that Act of 1871 your Lordship will see refers to that two months' period.

30,225. (Major-General Scott.) Then with regard to the exemption of the companies from penalty for non-supply arising from frost, unusual drought, or other unavoidable cause or accident?—You are alluding now to clause 15 of the Metropolis Water Act, 1871, are you not.

(Major-General Scott.) Yes.

(Mr. Pope.) If General Scott would forgive me, I think this shows that I was right in my supposition as to what took place. There is a letter which is in your mind, I have no doubt Sir, which is put in on page 522 of the appendix to the Minutes of Evidence taken before Lord Balfour's Commission which is a communication to that Commission from the Clerk of the Wimbledon Local Board of Health, giving an account of the transaction in which the company did raise the point, sending round their inspectors for fittings, they having been called upon to give a constant supply after the district had been brought within the metropolitan area. There is a long letter.

(Major-General Scott.) And they proposed to send round their inspectors after the consumers had received a constant supply.

(Mr. Pope.) Certainly, they had had a constant supply without the metropolitan area, the provisions of that section not applying; and then the Local Board, there being some defect in the constant supply, seem to have given a notice to the Southwark and Vauxhall, and it appears then that the company met this summons by sending a large number of inspectors to test the fittings of the houses of the district, and it is believed they were prepared to set up as a defence that the fittings of the district were such as to relieve them from the obligation to give a constant supply. That is a paragraph from the letter in question. It refers to yourself, Sir, as having been present at a conference on the matter, so that I am afraid you will know more about it than I do.

(Major-General Scott.) What really did occur had rather escaped my memory, but it seemed to me that if the company could do that generally speaking with reference to districts in which constant supply had been given, and could revoke the constant supply, it would be exceedingly inconvenient.

(Mr. Pope.) I am quite clear that they could not do that under the proper construction of section 10, being within the metropolitan area; whether this was a good contention or not I do not know; whether it was ever tested I do not know, because the letter only shows that it is believed they were prepared to set this up as a defence—whether they ever did or not I really do not know.

(Mr. Pember.) It looks to me as if the defence would have been good.

(Mr. Pope.) I will not argue it.

(Mr. Pember.) What they said was, up to this time you have had constant supply, not as a matter of right, because you were outside the metropolitan area, now for the first time you are claiming it as a matter of right, and we claim as a matter of right to see that your fittings are all in order.

(Mr. Pope.) It never was adjudicated upon. This is what the last paragraph of the letter says: "Ultimately the summons was withdrawn upon an undertaking by the company within four months to make an inspection of the houses in the district and give to the Local Board details of defective fittings in each house. This undertaking has not yet been complied with, though it is right to add that the four months 'have only quite recently expired'—and then they make a submission to the Commission. But I did not advise the Southwark, and I should hesitate to advise them upon a point of that kind, certainly.

30,226. (Major-General Scott.) To revert, Mr. Bonnor Maurice, to what I was saying with regard to the saving of the companies from penalty in case of non-supply, if the want of such supply should arise from frost, unusual drought, or other unavoidable cause or accident, is there any limit to the application of that exemption—I mean assuming that a company had neglected to provide storage to meet the ordinary increase of supply in a dry summer, and in that particular summer there happened to be an unusual drought—would the company be exempted from any consequences of a default of that kind?—I think it would be a question of fact to a great extent. The Act says frost or unusual drought, if we could show it was frost or unusual drought I think we should be exempt. But the question which you are raising, is one which is at the present moment before the Law Courts in the form of an application by the Hackney Vestry against the East London Company. That exact question has been raised.

30,227. What question—will you state it?—The question as to whether if a company could by reasonable foresight have foreseen the drought, they ought to have prepared for it. That question is one of the issues really now before the Railway and Canal Commissioners.

30,228. (Mr. H. W. Cripps.) Would that not be entirely a question of fact?—I think so too; it would be really absolutely a question of fact in each individual case.

30,229. "Unavoidable accident" is a question of fact entirely—could it be avoided with due care?—Yes, that would be so.

30,230. (Mr. Pember.) There would be the question of course, whether they exercised reasonable foresight and took reasonable precaution, and whether that plea avails against the words of the section?—Yes.

(Mr. Pember.) There would be that question, no doubt.

30,231. (Major-General Scott.) You see a company might be so much short in its provisions that it would in an ordinary dry summer so fail as regards the supply for six weeks perhaps; assume that an unusual drought occurred in that year or in any year, which caused it to fail in its supply for four months instead of six weeks, it could plead an unusual drought, could it not?—I think so, but then I think the *onus probandi* would probably be thrown upon the company of showing that the want of such supply arose from unusual drought.

30,232. The failure of supply for six weeks you may say might be due to the default of the company, because they did not provide for an ordinary drought, and the failure of the supply for the remainder of that period, would be due to the unusual character of the drought; would they escape altogether?—The answer to that really would be—of course the company is bound to take reasonable precautions to meet, so far as it can, what would be reasonably expected in the future; if it fails to do that, I take it there might be some question whether it would not be liable; but if on the other hand it could distinctly bring itself within the section, that the want of supply arose from unusual drought, I should submit that the exemption would apply.

30,233. But I do not think you quite take up my point, which is this, I assume, that the reservoirs were so deficient that six weeks' failure in any case would have arisen on an ordinary drought in an ordinary dry summer?—Then I imagine that the company would not be able to plead that the want of such supply arose from an unusual drought.

30,234. It is a question of whether any amendment could be suggested to make it more clear than it is at present, how far the liability of the company extends under this section; it is a very wide section as it stands at present?—I think each case must really depend to a

great extent upon the individual facts of that case, whether the company can show that the want of supply does arise from these specific causes, I do not think the section is unduly wide, if you will allow me to say so.

30,235. (*Chairman.*) It is very odd, but I do not find any of these exempting clauses in this summary?—Yes, it is there.

30,236. I do not find the clause for instance about the fittings exempting from constant supply?—Yes, I think I can give you the reference to it.

(*Mr. Pope.*) They are certainly not in the constant supply section. I looked very carefully myself, and I could not find them.

(*Mr. H. L. Cripps.*) Perhaps I might say that in considering this section which you are now discussing on behalf of the London County Council we were rather impressed with the word "or." Your Lordship will see that the section is—"A company shall not be subject to any liability for not giving a constant supply if the want of such supply arises from frost, unusual drought or other unavoidable cause or accident." Of course, it is a difficult question of interpretation, but unusual drought may be an answer although it might have been possible for the company to have provided against it in anticipation.

(*Witness.*) May I intervene for a moment and say that you will find this section at the top of page 5 of the schedule which has been handed in to you? It is section 15 of the Metropolis Water Act of 1871.

30,237. (*Chairman.*) Yes, that is the section about frost and drought, but I did not find the other one giving exemption from constant supply, if the fittings are not right?—That is not set out in detail; it is referred to, but it is not set out.

30,237a. (*Major-General Scott.*) In the first report of this Commission, paragraph 28, we have stated that it is "manifestly the duty of every water company to exercise reasonable foresight under expert advice and to provide as far as practicable against all contingencies which might endanger the continuity of the supply." May I take it from you that any failure of a company shown in that respect would bring them under penalty for default, even if there was a frost or drought of unusual character?—Of course, that is a very difficult question, and in answering it I am only giving you my own individual opinion. It seems to me that if the companies do not exercise a proper prevision—a reasonable prevision, probably they would not be able to bring themselves within the exempting clause. They must exercise a reasonable prevision.

30,238. (*Chairman.*) I do not think that quite meets General Scott's difficulty, which is this:—Supposing a company has failed in exercising reasonable foresight and then there supervenes one of the statutory extraordinary contingencies, does the supervision of frost, drought, or unavoidable accident excuse them from what would otherwise have been an apparent default?—That is an extremely difficult question.

(*Mr. Pember.*) Upon my word, my Lord, as a rule I have not taken any exception to questions being asked on the ground that they are not altogether fair, but, considering there is an action pending on this very point, although I think I should answer your Lordship, I do not think I ought. I think I must leave it in this way. I think Mr. Bonnor Maurice has gone a very long way in saying he is bound to take reasonable precaution. However, he says so. After all, recollect I may put this to you, I think, without danger, the action would be failure of water, the company would plead drought. Well, I do not think a judge would hold that it was relevant to the issue to give evidence that if there had not been a drought there would have been a failure too. There was a drought, and there is an end of it.

(*Chairman.*) I hope my observations are rather in aid of the companies.

(*Mr. Pember.*) Quite so; however, there is no harm in my saying that.

(*Chairman.*) If I understood General Scott aright, he was suggesting that case of a supervening drought, which covers, as it were, and excuses a preliminary default.

(*Major-General Scott.*) That is what I mean.

(*Mr. Pember.*) I will take it upon myself to say that if I happened to be in the august position of a judge I should say I am not going to try the issue of what

would have happened if there had not been a drought, There was a drought. What you want is the real exciting cause.

(*Mr. Pope.*) The words in the section "or other unavoidable cause or accident," I think, refer back undoubtedly to the previous expression. It must be a default which could not reasonably have been provided against, just as an ordinary case—

(*Mr. Pember.*) As I shall probably have to argue the point, I will not even admit that.

(*Mr. Pope.*) With regard to a culvert, for instance, you are bound to provide under a railway, say in the case of the Great Northern, a culvert sufficient to take all reasonably anticipated floods, but if a flood comes as it did in the case of the Great Northern, greater than was ever known before, and sweeps away the whole of the culvert, there is no liability on the part of the company, because that is an unavoidable accident by reason of its being greater than any reasonable provision could have been expected to have been made for.

(*Chairman.*) Even if you could have shown that, the culvert was so rotten, that an ordinary flood would have swept it away.

(*Mr. Pember.*) I say that question was not before the judge.

(*Mr. Pope.*) That question did not arise.

(*Chairman.*) I do not know that we can decide these nice points of law.

30,238a. (*Major-General Scott.*) I do not know that I have anything more to ask you, Mr. Bonnor Maurice?—I will just hand in this memorandum which has been referred to, setting out the provisions as to control to which the companies are subject by public statutes.

(*The Witness handed in Memorandum. See Appendix X, 3.*)

The witness withdrew.

30,239. (*Lord Robert Cecil.*) My Lord, before I begin my observations, I should just like with reference to the questions that you were good enough to put to Mr. Urban Smith, in which you ask for some evidence as to the increase in the pumping from the New River Company's wells onwards from 1875 to 1896—to say that there was a document handed in to the Royal Commission of 1892 at Question 8585 by Mr. Topley, on behalf of the New River Company which shows the well pumping from 1881 to 1890, and from 1891 to 1898 there has also been available the Water Examiner's Reports. I have had this Table prepared which shows the pumping, and if your Lordship would like to see it, that I think, to some extent, answers the questions you were anxious to have answered by the witness, that is to say, as to the New River Company only.

(*The learned counsel handed in Table. See Appendix K, 5.*)

(*Lord Robert Cecil.*) Your Lordship will see that there has been no regular increase, but taking it in periods similar to the periods with which Mr. Urban Smith dealt in dealing with the reduction of the Chadwell spring and of the Lea, there has been from 1881 to 1898 a very considerable increase.

(*Chairman.*) You say these quantities are taken from the Water Examiner's Report.

(*Lord Robert Cecil.*) Your Lordship will see the note at the bottom, which gives the authority from which each of the things is taken. As to the East London Company, we have not been able to get any detailed information. All we know is that before Lord Balfour's Commission, they said they were pumping about 2 million gallons a day, and now they are pumping a great deal more than that; last year they pumped 5 millions, but we cannot give you anything more detailed than that.

LORD ROBERT CECIL called to address the Commission.

My Lord, I trust I shall not detain the Commission very long with the observations that I have got to make on behalf of Hertfordshire. In the first place, your Lordship has been good enough, and other members of the Commission have been good enough more than once, to ask me in what way I could say that the Hertfordshire case bears upon the reference to your Commission. I propose, therefore, just to say by reference to the actual wording of the reference, how I suggest our case bears upon the various issues before you. The first one is whether, having regard to financial considerations and the present and prospective

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requirements as regards the water supply, it is desirable in the interests of the ratepayers and water consumers in those districts, that the undertakings of the water companies should be acquired and managed, either (a) by one authority, or (b) by several authorities. Now, as to that, the Hertfordshire case goes to this—that we are prepared to argue before the Commission, and I think to prove before the Commission, that it would not be desirable in the interests of the ratepayers and of the water consumers, that the New River and East London should be bought, at any rate, on the basis that any increase of water was obtainable from the chalk. That is the point as far as that is concerned. Your Lordship will recollect the evidence of Mr. Wilkins, and I think Mr. Middleton, and I think Mr. Francis, in which they anticipated, and declined altogether to pledge themselves against, a very large increase of water from the chalk; I mean to say, if that is to be counted upon, then it would be very undesirable to purchase the undertakings on that basis. As to control, we, of course, say, and I understand from what your Lordship was good enough to say yesterday, that I shall have to deal with it; but it is quite evident that, assuming the control we advocate is within the jurisdiction, if I may so put it, of this Commission, that there is a great deal of control that we can suggest to your Lordship as desirable. The only other observation that I have to make upon the wording of the reference is this: On the second paragraph of the first reference, I do not propose to argue it at all, but merely to say on behalf of Hertfordshire, that if the water companies are purchased, we do not see that we should gain anything, but rather suffer by physical severance of the works so as to hand over what I understand to be suggested—and the only thing that has been suggested—the actual supply works, without handing over the sources in Hertfordshire. We do not see how that could be applied to Hertfordshire usefully, and indeed the actual consumption of the water companies is so small in Hertfordshire, that it would not really improve our case or deal with the serious grievance that we have felt. It results from what I have stated to your Lordship that the first proposition that I shall very briefly try to establish before your Lordship is, that there is no reasonably possible increase to be expected from the wells in the chalk. That is the first proposition that very briefly I must attempt to establish before your Lordship. I shall base my argument partly on the general theory of underground water and partly on the actual facts as they have been proved before your Lordship. I am afraid I must deal in the first place with the theory. As I understand it is accepted by everybody, that when the rain first falls on the outcrop chalk it sinks through the chalk until it gets to the impermeable strata underneath. I am assuming, starting with the chalk quite dry and before any rain fell; it then fills up that, and gradually passes, flows if you like—flows through the chalk, from a north-westerly direction to a south-easterly direction. I take that to be common ground as far as I understand Mr. Middleton's evidence and Mr. Francis's evidence and Mr. Urban Smith's evidence. We are all agreed as to that in the first place. The water flows very slowly, through the chalk, and the rain continuing to descend, gradually fills it up until the chalk is saturated up to a certain level—when I say level, level is not quite accurate because it varies according to the surface of the ground. The more water filling up under the hills and less water under the valleys. The next thing that happens is that as the plane of saturation, as it is called, rises in the chalk the water flows out into the more deeply out valleys, that is the first thing that happens so that you get the streams running in the chalk valleys. I understand that so far we are all agreed. I think it is the first thing, that undoubtedly is the account of the ordinary chalk stream, there is no dispute as far as I understand between any of us as to all of that. Now we come to the verge of difference. Not only does it flow out into the valleys, but since it is all flowing slowly underneath from the north-west to the south-east, it flows through the chalk and gets past the point where the chalk outcrops underneath the clay. That of course is common ground, that the chalk goes underneath the clay, under the London and Essex clays all trending in that way from the north-west to the south-east. I think that it is really common ground—I shall refer your Lordship to some answers which Mr. Middleton gave me, but I think it is quite common ground, that, as it gets under the clay, the overlying weight of the clay presses down the chalk, and closes up all the little fissures and cracks and the

porosity of the chalk becomes less because the chalk, not only is in itself, each lump a sponge, but owing to the formation there are little fissures—of course Sir George Bruce will forgive me for being so very elementary, but I want to make my points clear as I go along, not only is the chalk itself porous but there are little cracks and fissures in all directions. As the chalk gets under the London clay, the weight of the clay presses on the chalk and crushes it down and tends to make it more and more solid. I think that that is substantially admitted by everybody who has given evidence on the subject. I prefer always to go to my adversaries if I can, and I will venture therefore to read a few answers that Mr. Middleton gave to Questions 18,858 to 18,864. What he said was this “(Q.) Therefore all the water, if you are right, that flows from the Hertfordshire chalk into the underground river has to pass under this London clay?” —(A.) Yes. (Q.) Every drop of your underground river must go under the London clay?—(A.) Yes, except what is forced out between the junction of the clay and the chalk. (Q.) Except what comes out in springs and streams?—(A.) What is forced out in that way, and, therefore, comes out in springs and streams. (Q.) You say forced out. What do you mean by forced out?—(A.) Exactly the process that you are speaking of. You get a nip where the clay comes on the top of the chalk, and the water runs out of the edge of that nip. (Q.) Why does it run out?—(A.) Because it is nipped. (Q.) Why does it not run by your underground river?—(A.) Because it is nipped. (Q.) Why do you call it a nip?—(A.) Because there is not sufficient space to run down.” That is to say, that the weight of the clay presses the chalk, and whereas there was sufficient space for the water above the point where the clay overlies the chalk, when you get under the clay it presses the chalk together, so that there is no longer sufficient space to contain the water, and it is forced over the clay. Mr. Pember, who saw the importance of that reply, a few questions on, intervened in this way: “Would you mind saying what you mean by the word nip.” And I think Mr. Middleton then explained the thing very well, “That the weight of the clay on the top crushes the chalk at the nip and closes the fissures.” That is what I am endeavouring to express to your Lordship and the other Commissioners. I see there are some other questions I ought, perhaps, to read to you: “(Q.) So that the underground river in the chalk if it exists, can no longer carry the same amount of water that it carried in the bare chalk. That is what you mean?” —(A.) That is not necessarily so. (Q.) But that is what you mean?—(A.) Very probably it is so. (Q.) That is what you mean by nipped?—(A.) That is what I mean—if it is closed together.” Then I go on to another subject which I will not read at this minute. Therefore, that is the account of all these springs which you find running, and bursting out at the point where the chalk dips under the clay; the Chadwell spring is the most celebrated of them, but there are, if you look at the map, a whole row of them all along the chalk.

It has been said very frequently before the Commission, and I am afraid I am responsible partly for the phrase, and other people too—Sir John Evans, I think, is the originator of it—that the Hertfordshire theory is a reservoir, whereas the companies' theory is an underground river. Both are misleading expressions. The real true theory partakes both of a reservoir and of an underground river, because it is evident that if what Mr. Middleton said to me here is right, as the thickness of the clay increases, so as you get more and more under the clay, you will get the chalk more and more crushed together, so that you will get a progressively restricted pipe as it were, coming from the bare chalk towards the sea.

I do not know whether your Lordship's would allow me just to hand in a very rough drawing of a diagrammatic character, that is to say, of a very inaccurate character, to explain exactly what I mean. (*Handing in a diagram.*) Your Lordship will there see that the part that I have scribbled over with blue pencil represents the chalk, and the part that I have crossed with ink represents the London clay. I have assumed that instead of a lot of little fissures all the fissures in the chalk are thrown together into one pipe. I think Sir George Bruce will agree that it can clearly make no difference whether you have a lot of little pipes through the chalk, or one big pipe. Have I made myself clear?

(Chairman.) Perfectly.

(*Lord Robert Cecil.*) Then your Lordship will see that so long as the pipe is under the bare chalk I have assumed it to be fairly parallel in size, but when it gets under the London clay it gets gradually restricted until at the lowest point there is very little room to pass at all, and, consequently, very little water can get underneath. Your Lordship will see an upward shaft which I have called the Chadwell spring—of course merely diagrammatically. If your Lordship can conceive the whole of that pipe filled up with a constant pour of rain—which, of course, is not accurate, but that would explain what I mean by it—coming rather quicker into the pipe than it can get out by that lowest and narrowest passage underneath the London clay, it is clear that the pipe would gradually fill up, and that when it had filled up to a certain point it would rise up that shaft which I have called the Chadwell spring, and it would burst out there. It would burst out there first of all, because that would be the lowest point of the chalk, the point where the clay first begins to overlie the chalk. I may be wrong, but that is what I understand Mr. Middleton to have meant in his answers to me, and it is certainly what Mr. Urban Smith meant, and what Mr. Baldwin Latham meant, and what Sir John Evans meant. That is the theory—that it comes up in that way, and overflows from the Chadwell spring, and, to a lesser degree, from the other springs all along that line. Your Lordship sees the importance of that. All the water in that great pipe, or rather, as it is in reality, in a series of little pipes, is under pressure—hydraulic. That is the reason why it comes up. The result is, that if you drive down a well anywhere in that pipe the water will rise up through the shaft of the well until it reaches the top. That, in fact, is what occurs. We have had that in evidence. I remember Mr. Bryan telling us about the Waltham well where the water rises up above the surface. It is so, unquestionably. That is really the whole point. It has been said that the difference is between an underground river and a reservoir. That is not the true way of putting it. We all admit that there is a flow from the upper chalk underneath the London clay. The point that is really important for the Hertfordshire case is, that the water in the chalk under the clay is under pressure. That is the vital fact that is important, because, if it is under pressure, it follows that if you make an additional opening by a well—if you pump water out of that chalk under the clay—it is quite evident that what you are really doing is to enlarge the opening and allow the water to flow more quickly from the upper chalk into the lower chalk, and so into the well. That must be so. If there is more water coming in at the top of this pipe than can get out at the narrow place at the bottom, and, consequently, some overflows, which is the account of the Chadwell spring, it follows that if you drive a shaft into that pipe anywhere short of the narrowest point—anywhere, that is, between the higher chalk and the narrowest point of the pipe, it necessarily follows that you are providing an additional outlet for the water in that pipe—that is to say you are enabling the water to come more quickly from the upper chalk into the chalk under the London clay. If that be so, it is quite evident that theoretically, and apart from the accidents of nature and so on, every drop that you pump out of the chalk under the clay must come directly from the springs and streams. The only case in which the underground river theory will help the water company is if the outlet under the London clay is as large as the inlet above the London clay. If there is no pressure at all, then it is true that if you take water from the pipe you will take it from the water that is going past you and not from the water that is coming to you. If there is any pressure it must be that you take the water that would otherwise go into the springs and streams. Now I do not know that anything I can say will put that point any more clearly than I have tried to put it, but it is clear that if it be true that the weight of the London clay does compress the chalk, and therefore does diminish the size of the fissures and the size of the little pipes that lead into the sea, that you will, as you get under more clay, get greater pressure, greater diminution of size of pipes, and less room for the water to pass—more pressure in fact, and therefore up to that point where you get the extreme pressure everywhere that you put down a well you will really be enlarging the opening down which the water is to flow, and diminishing the water that otherwise would overflow into the springs and streams of Hertfordshire. That is the theory; I do not know that I have been fortunate enough to make it plain. It is a little complicated I know, but I do not really

see that there is any considerable difference of opinion between us as to the theory, except only this, that Mr. Middleton seems to have thought that you might get rid of this difficulty by saying that the chalk spreads out on each side. I did not follow what he meant, because it is quite evident, as he admitted to me, that the chalk, sideways, as it were, extends underneath the London clay precisely as far and no further than it extends above the London clay, that is to say, that taking the line of chalk hills that come down through Hertfordshire from north-east to south-west transverse to the line of the flow of the water, that represents the whole of the chalk that goes under the London clay. You have not any more chalk under the London clay than you have above the London clay—not in section; the section of the stratum of the chalk under the London clay is just as small as the section of the chalk above the London clay. It therefore follows that if there is less room in the fissures under the London clay for the water than there is in the fissures above the London clay, the water when it gets under the London clay must be under pressure, and therefore the more holes you make into it the quicker you will get your flow under the London clay, and the less you will have down the stream.

Now, turn to the facts, that being the theory—I trust your Lordship will be good enough to interrupt me if there is anything that I am failing to make plain, because I am quite aware of the great difficulty of this subject, and I should be very grateful for any opportunity of explaining anything that your Lordship may wish.

(*Sir John Dorington.*) Does not your theory preclude the idea of there being any discharge where the chalk is exposed at its lower level towards Erith?

(*Lord Robert Cecil.*) No, sir, it does not. I am much obliged to you for that question. I assume that there is a passage underneath the London clay here.

(*Sir John Dorington.*) Some passage?

(*Lord Robert Cecil.*) A small passage at Erith, and, as far as we know, there is no great discharge. There has been no evidence of a great discharge—I shall have to deal with that in a minute. Of course, it would have been quite easy for the water companies to ascertain that there was a great discharge, but all our experiments go to show that there is a very small discharge.

(*Sir John Dorington.*) We have had some evidence on that, and I wanted to draw your attention to it in your argument.

(*Lord Robert Cecil.*) I am much obliged to you, sir. The facts as to Erith are these, that there is a discharge, that the amount of it is unknown, but it is admitted not to be a very large discharge, and that it is impossible to say how much of that comes from the Kent chalk and how much from the Hertfordshire chalk. I do not know whether I have answered your question.

(*Sir John Dorington.*) Yes, I see it.

(*Lord Robert Cecil.*) Of course, I have never said, and I do not understand that anybody has ever said, for Hertfordshire that there is no flow under the London clay. That is not part of our case at all, and it really is immaterial whether there is some flow or whether there is none. I should say myself that the probability is that there must be some flow under the clay, and that there is a certain flow. The point is that it is progressively restricted, so that every time you make a hole into this pipe or into these fissures, and facilitate the passage of the water from the upper chalk, that means that you diminish the amount that would otherwise overflow into the springs and streams. That is the whole point, and it is not necessary for us to show that there is no flow—only that there is a restricted flow.

Now, if I may go to the facts; in the first place, I think it has been proved and admitted by everybody that there is an inter-communication of the water in the chalk. That has been shown in evidence. You will remember, I think, a most striking instance was given by Mr. Middleton, at Question 18,664, where I do not say he absolutely pledges himself that it is so, but he says it is exceedingly probable that the Chadwell spring is in direct hydraulic communication with the Swallow Holes at South Mimms, which are 10 miles off. That, as far as the general theory of the inter-communication of the water in the chalk goes, is quite sufficient. Of course, we could not hope to get any direct evidence more precise than that.

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(Sir John Dorington.) What question is it?

(Lord Robert Cecil.) Question 18,664. Perhaps I might read it. I was asking him something about the Chadwell spring, and he rejects something I say to him, and he says: "I do not think so, because at the present time nobody knows exactly where the Chadwell spring rises. It has been very generally supposed that it came from the Swallow Holes at South Mimms. Those Swallow Holes at South Mimms are dependent to a very large extent upon the manner in which the rainfall comes down. If there are very heavy storms the Swallow Hole into which the water runs is filled up, and a very large volume of water runs on into the River Colne. If, on the other hand, it comes down moderately slowly, and the basin of Swallow Hole is kept full, a large quantity of water flows down into the chalk stratum underneath, and the supply is very much augmented in that way, whereas a very much heavier rainfall extended over a short period augments it very little. (Q.) Then, as I understand you, you say the amount of the Chadwell spring depends on the condition of the Swallow Holes at South Mimms?—(A.) I think that is probable. It is not proved." Then there is some question as to the distance, and eventually I and Mr. Pember are able to agree, from a knowledge of the locality, that the distance between the two spots is between 9 and 10 miles.

Then there is also the instance of the Haileybury well. I am not going into that except to this extent, that I think a certain amount of confusion has arisen in the evidence as to exactly what is intended to be proved by the pumpings from wells. Evidence has been given to show that the Haileybury well is directly affected by the Rye Common well. The real fact is that there are two effects produced by pumping in the chalk, if we are right. There is, first, the local effect, which has been called the cone of depression; and then there is the general effect of lowering the water in the chalk. I do not know whether I might illustrate it. I do not know whether your Lordship has ever seen a grain elevator.

(Chairman.) No.

(Lord Robert Cecil.) That is a pipe put down on the top of a cargo of grain, up which a great current of air is drawn. The result is that the grain flies up the pipe, and is stored in the warehouses. If you watch that process in operation you will see that the first thing it does is, of course, to dig out a little hole underneath the pipe that gradually extends, making an inverted cone, the grain falling in on every side into this cone, and going up the pipe. That is precisely what happens, as far as the cone of depression is concerned, when you pump water in the chalk. It falls away on each side, and since it is checked by the chalk a little, it does not fill up the cone instantly, but it makes a cone of depression all round. But it is evident that that is not the only effect, because if it were the only effect, then when you had pumped out your cone the supply in your well would cease; but it does not do so, and it is admitted that it does not do so. You can go on pumping, because the water pours in from the chalk all round; it pours into the sides of your cone, and pours down the sides of the cone into the bottom of the well, and is pumped up in its turn. So that it has two effects. The first effect is to make your cone; the second effect is to withdraw water from all the surrounding chalk far beyond the cone of depression. That evidently must be so, because, if the witnesses of the water companies are right, the cone of depression commonly does not extend more than half a mile or three-quarters of a mile round a well; and it is quite evident that no considerable amount of water could be drawn from a cone of depression of that extent.

Now, the Haileybury instance and the other instances of wells that are affected directly by pumping have been given to this Commission merely with a view to show that there is an inter-communication in the chalk, and that this cone of depression exists, showing that, at any rate, in the surrounding chalk there is complete communication, the inference being that there is communication right through the chalk in all directions. It does sometimes appear in the evidence—and I think, if I may venture to conjecture on the subject, some members of the Commission have thought—that the only object was to show that one well near another would pump it down, and that the great grievance of Hertfordshire was that, when you pump at the Rye Common well you pump down the Haileybury well, and so on. That is not the case. That is a very small

matter. The actual cone of depression could be met obviously either by shifting your well a little further off, or by driving it a little deeper. If we are right, and the theory that I have already put before the Commission is right, that when you pump out of the chalk you not only produce a cone of depression in the immediate neighbourhood, but you lower the level of the plane of saturation right away back from the chalk. Sooner or later—of course it takes a certain time—you have a very much more serious state of things to deal with. The Haileybury case shows the existence of the cone of depression, and that it is of very much greater size than the water companies are prepared to admit; but it does not show, of course, that there is a general lowering of the level in the plane of saturation; it only goes to show that, because it shows—

(Chairman.) But the water that you pump out beyond that cone of depression has all come from above.

(Lord Robert Cecil.) That is it, it has all come from above.

(Chairman.) If there is as much coming from above as you pump out there will be no lowering of the plane of saturation.

(Lord Robert Cecil.) Forgive me, my Lord, surely there would. If it is coming from the chalk above freely then that must lower apart from the rainfall.

(Chairman.) Yes, apart from the rainfall; if you compare your well to a waggon full of grain, as you did just now, of course you ultimately pump up the whole waggon full, but if the grain continues to be poured into the waggon as fast as you are taking it out, that would not be so.

(Lord Robert Cecil.) It is quite evident that that would be the case, but nature has provided an overflow exactly commensurate or almost exactly commensurate with the flow back—that is the streams and the springs. That is the point of my argument, and that is the point of this diagram which I was venturing to submit to you. The water comes in more freely than it can get away underneath. That must be so because otherwise the water would not be under pressure here. All the water that cannot get away underneath goes away in springs and streams. It follows, therefore, that if you take water by your well you must take it from the water that is going away in the springs and streams. You do not diminish the amount that is going away underneath, because ex hypothesi the water is under pressure, and will go through that hole as fast as it can. What you will diminish is the water that is going away in springs and streams. It must be so if the water is under pressure in that. That is the theory that I venture to submit.

As to the fact that very little water is going away underneath the clay you have a series of striking facts. Of course I quite recognise that that is a very important point for me to make out. You have this—you have the statement Mr. Urban Smith made yesterday, I think, that there was very little water under Essex, and you also have the statement which I should like to call the Commission's attention to, of Mr. Francis at Question 23,103, in which he referred to a very curious circumstance, which was to a large extent news, I think, to the Hertfordshire advisers, that wells even a considerable distance from the Essex coast were brackish. That really proves conclusively that there is a very small flow of freshwater in the chalk, at any rate, round the coast of Essex. He said "We know that all round the Essex coast both on the Thames and in the sea there is a constant flow of water. (Q.) Where? (A.) That is proved by the fact that any well sunk within a short distance, or in some cases a considerable distance of the shore, gives brackish water when pumping is going on. That proves that there is communication with the sea to give the salt. It proves that there is communication with the fresh water in order to dilute the salt water and make it brackish. (Q.) Does it not conclusively prove that there is a very slight flow of fresh water and a relatively considerable flow of salt water back into the well? (Mr. Pember.) No. (The Witness.) No, it proves that there is an open communication." Then I asked a few more questions and then eventually the subject is regarded as not sufficiently important—perhaps I ought to read the next question. I say: "How far is the farthest of your branch wells from the sea coast? (A.) I think there is an instance of one in Essex, 17 miles away"—I believe afterwards Mr. Francis was good enough to

give us the figure of 12 miles away—"but that is very exceptional." Then he says he does not know how much is pumped, but at any rate the water is salt in that well.

I venture to say that what that proves is this—that under that part of Essex the pipes in the chalk must be flowing very slowly indeed, because what it means is the pumping from an ordinary well, not a water company's well—you will find no water companies on the coast of Essex—but an ordinary well, and consequently relatively a very small amount of water being taken, you take the whole of the fresh water that is coming into the well, and not only that, but through 12 miles of chalk you draw back the sea. If there is, there, any considerable pressure of water, of course, that could not possibly happen. You have merely got to test it where there is a considerable flow of water going into the sea, as there is, for instance, on the coast of Kent. If you put down your well even quite close to the sea, you will have it full of fresh water, because the pressure of water rushing out into the sea prevents the sea necessarily from coming back. It is only where the pressure of the fresh water is very slight—and consequently there is very little fresh water going out into the sea—that you can get any back flow of the sea water. That shows that all along the coast of Essex, of which Mr. Francis is there speaking, there is a very slight flow of fresh water in the chalk under the clay—at least, that is what I submit that shows. Then there is the evidence of the only other place where there has been a considerable number of wells pumping, namely, London. It is admitted clearly by Mr. Middleton, at Question 18,900, there is actually a very considerable flow—but relatively a very small flow—under London, that is to say in the chalk under London—"Q.) And in point of fact, where you are able to test it under London, there is no such flow of water? (A.) There is a flow to the extent of about 10 million gallons a day there.—(Q.) But nothing which will serve your underground stream? (A.) Certainly not." Therefore it is clear that the underground stream, by Mr. Middleton's own statement, does not exist under London. I submit that it does not exist along the coast of Essex is clear from the answers Mr. Francis has given. Therefore the underground stream, if it exists at all, must be running down in an exceedingly narrow channel between the Essex coast and London. There is no evidence whatever of its existence—none whatever, and all the evidence by analogy is that the conditions which prevail under Essex generally and the conditions which prevail under London must necessarily prevail in the intermediate space. Therefore, as far as the facts go, as far as they have been ascertained at present, it seems that the evidence, so far from supporting the existence of this underground stream in any large quantities, this underground rush of water, which is necessary for his theory, is non-existent.

(Major-General Scott.) I suppose you do not dispute that there is a slow translation of water?

(Lord Robert Cecil.) No, sir. I do not know whether you have seen my exceedingly rough diagram?

(Major-General Scott.) Yes, and I quite understood it.

(Lord Robert Cecil.) I have no doubt you did. You will see that this is not disputed, and that on the contrary I think it would be very improbable that no water finds its way through the chalk even under the thickest part of the London clay. I should think that in all probability, and as far as we know, there must be some, because you do find some water when you drive your wells down in Essex; you do not find a large quantity, that is true, but you find some, and that water must come from somewhere. Therefore I should quite admit that there is a slow flow, but not sufficient to account for the water that is coming in, unless you add the streams and springs which really operate as an overflow, and it is noticeable—

(Chairman.) But, Lord Robert, before you had any of these water companies pumping you had the same chalk, the same clay, the same choked-up fissures, and all the rest of it.

(Lord Robert Cecil.) Yes.

(Chairman.) Then all the water that came in from above went out somewhere.

(Lord Robert Cecil.) Yes.

(Chairman.) Those apertures are there still.

(Lord Robert Cecil.) Yes, my Lord.

(Chairman.) But they carry very little water now, you say.

(Lord Robert Cecil.) No, they always carry the same; I do not say there is any distinction whatever between those; but I say that the water which now goes to the pumping then went down the springs and streams, and the springs and streams have diminished. I will come to the evidence as to the diminution of the springs and streams in a minute, that is essential, I agree. I am sorry that I do not make my view quite clear to your Lordship. If the water companies' wells were beyond the most constricted pipe, I agree you would not hurt us at all then, you could not hurt the Hertfordshire people then; but it is because it is between the constricted pipe and the open chalk—the larger pipe—that you must hurt Hertfordshire.

Let me see whether I can put it in some other way. Supposing you enlarge that constriction simply; supposing you made it larger and allowed more water to flow—it is evident that you would have to get that water from somewhere, and the only place you can get it from is from the springs and streams; that is the only overflow you have got. Supposing you have got a bath with a waste pipe and an overflow pipe; if you fill it quite full so that it is flowing down the overflow pipe, and you keep a stream perpetually coming into it equal to the overflow pipe, the overflow pipe will flow with a certain force; if you then turn on the waste you will diminish rapidly the overflow necessarily, if you keep the same amount of stream coming into the bath. If you turn on the tap to some extent, just sufficient to counteract the outflow from the overflow pipe, you will keep the bath full, and you will have the water going away down the overflow pipe—that is the springs and streams. If you now turn on the waste you will withdraw the water more quickly than it is coming in by the taps. You will, therefore, immediately lower the level of the water in the bath and diminish the outflow down the overflow pipe. If you take—which is, perhaps, the best instance of all—an ordinary natural lake, it is just the same case. Take the lake of Geneva, or any other lake; you have a stream coming in at the top and a stream going out at the bottom necessarily equal to one another. As the stream rises at the top the stream at the bottom rises. If you now proceed to pump—of course you would have to do it to a great extent dealing with the Lake of Geneva—if you now proceed to pump out the lake, you will diminish, not the stream coming in at the top, but the stream going out at the bottom.

(Sir John Dorington.) So that all the springs and wells in Hertfordshire that we are talking about, are, to a certain extent, artesian, and if your constricted pipe was open a little, they would all become less artesian, that is to say, they would be under less hydraulic pressure.

(Lord Robert Cecil.) That is exactly the point, sir, that the more you increase the outflow under the London clay, which you do every time you put down a well through the London clay, or at the edge of the London clay—it makes no difference where—the more you diminish the overflow. You must take the water from somewhere, but you will not take it from this stream of Mr. Middleton then, because this is a constricted stream, and because the water is under pressure, and it is always pressing to get through that stream, and, therefore, there is more water than that stream can carry necessarily. It must come from somewhere; it will come from the springs and streams; it can come from nowhere else. You must diminish the overflow. As I am reminded, of course, every bore pipe there is put down through the London clay shows, as Sir John Dorington has pointed out, that the water is under pressure and rises to the top directly.

What your Lordship was good enough to say to me just now is, of course, of the utmost materiality, as you put it. Always, from everlasting, the chalk has been in the same condition, the stream has been in the same condition, and the rain has been, roughly speaking, in the same condition. You can take those as constants. If our theory is right it ought to be possible to trace, probably not very directly, because there are so many other things, the seasonal variations of rain, and so on, but you ought to be able to trace generally a diminution of the springs and streams in Hertfordshire as the result of the pumping. I agree, I think, it is essential, and if we could not show that or show some grounds for believing in that our case would be much weaker than it is.

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Now, I do venture to call your Lordship's attention to the evidence that was given by Mr. Urban Smith, which apparently the water companies did not dispute, because they made no cross-examination to it, and indeed I do not think it can be disputed because it arises from figures which are unquestionably indisputable. Now what is the result of that evidence? He took the Chadwell spring and the River Lea as his two typical instances, and I do not think that anybody will suggest that there is anything unfair in taking those two instances. He showed that as to both of them, allowing for the rainfall as far as you can you find a much greater diminution in the yield both of the spring and of the stream than could be accounted for by any variation in the amount of the rainfall, whether you took the rainfall throughout the year, or whether you took the winter rainfall. Of course it is always exceedingly difficult to establish that kind of thing by figures because necessarily you will have a wet year succeeding a dry year and you will have for the moment a greater flow down the stream or a greater yield of springs; and they say, oh! that shows what nonsense your theory is. The only way to do it is this—to take periods of years, because you must have something to average out the lesser variations. He took it, as your Lordship is aware, in three-year periods, in four-year periods, in five-year periods, in six-year periods, in seven-year periods, and in eight-year periods, and in every case, without any exception at all, he found that whereas the yield of the Chadwell spring had diminished some 40 to 43 per cent., the rainfall had never diminished during any of those periods more than 15 to 16 per cent. at the outside. Now, that is exactly what you would expect if our theory is right. There is no other explanation that has yet been suggested of that—no other explanation whatever. It seems to me in default of any other explanation we are at any rate entitled to say we have an explanation, you have not. Here is a diminution of the springs and streams, exactly what we should expect if our theory is right; what is your explanation if our theory is wrong? It is said, oh! your theory proves too much because there has been no considerable increase of pumping, and it is quite true that, as one would expect, I submit, you cannot trace each gallon of water that is taken in the wells, and say there is a gallon of water less in the stream, I agree to that. You have got a considerable compensating reservoir which will prevent your being able to trace the immediate effect of any particular pumping operation. But taking it in the rough and in the gross, you will find that in the period dealt with, namely, 1880 to 1893, there has been a considerable increase of pumping from some four or five million gallons a day, taking both the New River and the East London together, to some 15 or 16 million gallons a day; and taking it in the rough again, here you will find precisely what you would expect—a diminution in the gross of the flow of the spring and of the stream. Those are, as far as I know, all the facts that directly bear upon it, because though Mr. Middleton and Mr. Francis, and I believe Mr. Bryan too, though he did not give any evidence about it—but Mr. Middleton and Mr. Francis at any rate—assert the existence of this underground stream, this underground river, this underground rush—not this underground dribble but this underground rush as great as the water that is coming in at the top—though they assert the existence of it, they have not laid one single fact before the Commission to prove its existence—not one single fact.

(Chairman.) Except the difference between rush and dribble you admit it, Lord Robert.

(Lord Robert Cecil.) Certainly, I do not deny—

(Chairman.) You admit an underground dribble; you deny an underground rush.

(Lord Robert Cecil.) Yes, my Lord.

(Chairman.) I do not know that anybody ever said there was an underground rush.

(Lord Robert Cecil.) Yes, my Lord.

(Chairman.) The whole question was whether there was a continued passage of water.

(Lord Robert Cecil.) I am reminded that Mr. Middleton has put it as high as 164 million gallons a day.

(Mr. Pember.) That would be the collective issue, but that is disseminated over the whole county.

(Chairman.) Yes.

(Lord Robert Cecil.) I know the 164 million gallons a day is a great deal larger than the Thames, for instance, in dry weather flow.

(Chairman.) That all depends upon the collecting area in the chalk.

(Lord Robert Cecil.) Yes, but the point, of course, is this—it is not the actual amount that is flowing in the chalk, that is not the point, the point is: are the springs and streams the overflow caused by the water coming into the chalk not being able to get away as quickly as it comes in, or are they due to some other wholly unexplained cause. If they are the overflow, it matters nothing at all whether there are 100 million gallons, taking that for argument, but I think we can show clearly that there is no such quantity—but as a mere matter of academical argument it matters nothing whether there are 100 millions or one million gallons going away through the chalk. The point is, is that water in the chalk under pressure? As to that, I think there can be no doubt. If it is under pressure that means, as Sir John Dorington has put it, that the springs and streams are in a sense artesian. They are driven up from below, and every additional opening you make into the body of water that is driving up from below you must take from the springs and streams, because you cannot take it from anywhere else. I think if I might venture to appeal to General Scott and Sir George Bruce they would not dispute for an instant that you cannot take water that is under pressure from below, and that you must take it from above; you increase the passage and increase the flow of water, that is to say, you make it more ready for the water which is always pressing to come on, and therefore you withdraw it from the top and not from the bottom. That is the whole point. Mr. Middleton and his school say that you take this water in the wells from below, and therefore you do not hurt Hertfordshire at all. We say that is quite impossible. If the water in the chalk under the clay is under pressure as we say it is proved beyond all question to be, it is quite impossible that you can take the water from below; you must be taking it from above. That is the whole point.

Now, unless there is any other point in connexion with the general argument that the Commissioners desire me to deal with, I have done with the general case. I pass now to the second head. I submit that I have established that it is not possible to count upon any increase of water to be drawn from the chalk, that is to say, if you do so it will be at the expense of the streams and at the expense therefore of the water which is otherwise flowing into the New River and East London systems quite apart from the injury which it is doing Hertfordshire which, of course, is the motive of our being here, but is not the reason which would affect the Commission, that is to say, you have not got an inexhaustible supply from the chalk, on the contrary, you have exhausted your available supply from the chalk, and no more can be drawn.

The only observation I can add to what I have said on the general topic is this: that the water companies, I understand, so far agree to this that they have never made any proposal—though they have not bound themselves not to do so—they have never made any proposal to take more than a very small additional quantity. They have already taken as much as 30 millions, and I think in none of the tables handed in to your Lordship have they suggested more than 40 million gallons to be taken from the chalk. Therefore they practically concede that there is not a large increase possible, but that increase—though it will be of very little service to them, the 5 or 10 or 15 million gallons more, whatever it may be, will be of very little service to them in dealing with the problem of London water supply—may be a very serious injury to the interests of Hertfordshire, and it is on that ground that I say that if we are right in our general theory it is not asking a great deal to say. Now do not take any more from the chalk, because they admit themselves that there is only a very little more that they can safely take.

Of course, I ought to add that the London County Council expert, Sir Alexander Binnie, seems to be entirely in agreement with us as to that. At Question 9,999, Sir Alexander Binnie said this in answer to your Lordship: "(Q.) As to Hertfordshire and Essex you have made no suggestion, I think?"—(A.) With regard to Hertfordshire, the wells in the Lea Valley appear to have reached a limit, we gather that from the recent application of the New River Company to Parliament for further supplies from the Thames. If it would satisfy the Hertfordshire Authority, an agreement could be come to that beyond a certain stipulated

"quantity of water, no more water should be taken from Hertfordshire. I do not know how far that would meet the objections of Hertfordshire." He said so on other occasions, I believe. If your Lordship cares, I can look up the quotations. There is no doubt that his evidence and the attitude of the counsel for the London County Council—I think your Lordship will bear me out in that conclusion—have been that they agree substantially with the Hertfordshire case that the limit of safe supply from the Hertfordshire chalk has been reached.

Now as to control. In the first place I will deal, if I may, with the general objection that your Lordship was good enough to put to me yesterday about the control, in a minute, but I will first state the kind of thing that we suggest ought to be done. In the first place we think there ought to be a statutory obligation on the companies to give the information which the Balfour Commission reported should be given. I need not recite it again to your Lordship, it has been recited to your Lordship and the Commission *ad nauseam*, but generally speaking, it comes to a record of the effect of their pumping operations, and the amount they are taking from the wells. I will give your Lordship a reference to the paragraph of the Commission, that is all. It is the latter part of paragraph 180, I think, which is the material one, and it is to be found on the top of page 72 of the Report. That is as to information. Then, as to change of law, of course, your Lordship only has to deal with the water companies here, and therefore, I do not ask your Lordship to recommend a general change of the law; but we say that it should be made illegal for any of the water companies to sink any more wells, or to pump any more water than they have already pumped without express Parliamentary authority. That sounds a very startling proposition, that sounds a very outrageous interference with private rights and so on, and Mr. Wilkins, that great defender of individual liberty, was very indignant at the suggestion. But I do not think it really is so outrageous when you come to look at it. In the first place, there is no evidence whatever, that any capital has been subscribed to the water companies upon the basis of their being allowed to sink as many wells as they like, and indeed, they themselves say, that they do not, in fact, propose to take any large additional quantity. Therefore, you are not depriving them of anything very serious as far as they are concerned, though the relief to Hertfordshire would be a very considerable one. Now, not only is that so, but if you look at the present state of the law, speaking with all respect, I do not think it is an unreasonable condition. You have this, that the general principle has been laid down, that unquestionably, there is no property in underground water, that is to say, that you may take as much water out of your ground as you like, however much injury it may do to your neighbour, without your neighbour having any remedy against it. That is really what it comes to. You may not pump brine for instance, because that will cause a subsidence to your neighbour. You may not do that, though there may be no property in the brine, and there is no property in the brine, yet you may not do it so as to injure your neighbour. Nor may you bring water on to your property so as to injure your neighbour. You must take all reasonable care, Rylands and Fletcher decided, as your Lordship is well aware, that you are an absolute insurer. If you choose to bring a large quantity of water on to your land, you do it at your peril. Therefore, though you may not bring water on your land so as to injure your neighbour, you may take water as much as you like. However, that does not appear to me to be a very sound or reasonable condition of the law. It is to be observed that of these wells of the various water companies, we have had it admitted, I think, every one has been sunk without any special statutory authority. It is not a case of Parliament having said you can go and sink that well, and then coming and saying now, you must not pump from it. They never have had any special statutory authority for any one of these wells, but they have done it under their general authority. They have all, I think, been sunk, except, I think, the enlargement of the White Webb's well—and every bit of those wells had been constructed and enlarged before the existence of the County Council—which body is the first body that has been in a position to represent the interests of the county at large on questions of this description. All their powers were acquired necessarily behind the back, if I may put it, not in any offensive way, but necessarily without the opposition of the

county of Hertfordshire, and before the county of Hertfordshire had any corporate existence which would have enabled it to oppose their proceeding, and to oppose the granting of the capital with which these wells have been made.

(*Chairman.*) Has the county of Hertford ever tried to ascertain whether the headings in these different wells have been driven beyond the limits of the companies' surface rights.

(*Lord Robert Cecil.*) I am afraid they never have, but it would be an exceedingly difficult thing to ascertain.

(*Chairman.*) On an action of trespass an inspection would be immediately granted.

(*Lord Robert Cecil.*) Of course the suggestion is a very valuable one. We might obtain the information, that we have been repeatedly denied, by starting an action of trespass. Then we could inspect and see what they were actually doing. The water companies have hitherto kept us at arms' length, and they always decline to give us any information at all as to what they were doing. But I should imagine they would be able—I do not in the least suspect them of illegality—that they have not in fact gone beyond their actual limits.

(*Chairman.*) Their surface limits.

(*Lord Robert Cecil.*) Your Lordship's question illustrates, if I may venture to say so, the absurd position of the law. If they went an inch beyond their surface rights we would be able to stop them directly, whereas, if they went to the very edge, and took the water which must necessarily come in from the other side you certainly could not stop them. I have said that these wells have been made, in a sense, behind the back of the county of Hertford, and it is not a very unfair expression when you look at the action that both Houses of Parliament have taken recently in amending their Standing Orders in such a way as to enable county councils to appear in opposition to any water scheme which they think will be of any injury to the county at large. I am quoting very generally, but that is the effect of the alteration in the Standing Orders that has been made. That has been for some years, I think, the Standing Order of the House of Commons, and this year it has been done in the House of Lords. Therefore, you have it that each House of Parliament separately recognises that these water companies may do a great deal of injury to the counties, and in spite of the want of property in underground water, they recognise that pumping operations may be of such an injury, that it is right to give to county councils a *locus standi* against the scheme, though the two Houses of Parliament acting collectively, and as a legislature, have not yet thought it right to alter the law with respect to underground water.

Now, I put before the Commission the substantive case of Hertfordshire, both as to the general theory that no increase of water from the chalk can be obtained, and as to the control. I have only two classes of observations left to make, and they will be short. In the first place, we have to deal with the observation which fell from the Commission yesterday, that they felt a difficulty in recommending a control, such as I have suggested, upon the ground that it is not the kind of control that they were appointed to consider. Now, of course, that is entirely for your Lordship and your colleagues, and I do not think it would be respectful for me to say more than a word about it. With the greatest possible deference, I do not see any essential distinction between recommending one alteration of the law, and recommending another. Unquestionably the reference gives you power to recommend such an alteration of the law as will increase the control of the companies. You could not increase the control of the companies, individually, without recommending an alteration of the law, and I should respectfully submit, that whether it is in the alteration of the existing statutes, or an alteration of the rule in Chasemore and Richards, or a carrying out of the recommendations of the Royal Commission of 1892, they are all in substance the same thing; but I say I do not think it would be respectful for me to argue the matter at length. I merely put that view before your Lordship for your Lordship's consideration. The only thing that I should very humbly venture to suggest is this, that if your Lordship and your colleagues are of opinion that this kind of control is not substantially within the reference to your Commission, I should respectfully ask your Lordship to say so, so that it may not afterwards be said that the Commission heard what Hertfordshire had

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got to say, heard them urge for instance—to take the clearest case—that paragraph 180 of the Balfour Commission should be made obligatory on the companies, and that having heard it the Commission decided not to do so. Your Lordship will see in a moment that that might have the effect of throwing great difficulties in our way whenever we came before another tribunal when we were urging the same argument. If your Lordship would say in the Report—if I may say so—that you had considered the question and without expressing any opinion upon it you did not think it was within your reference—that would be a different matter altogether, and we should be left perfectly free. In the same way with regard to the other more general objection that has been taken to the whole line, that I have ventured to submit to you more than once for Hertfordshire, that it is going behind the back of the Balfour Commission—I do not mean behind the back, but behind the position of the Balfour Commission—I quite recognise that may be so. That is a view that may easily be taken. I think that a certain number of new facts have come out since the Report of that Commission, which might enable your Lordship to take a different view from that Commission, but if your Lordship thinks not, then that is a position which I cannot respectfully controvert. I would say then in the same way that if your Lordship and your colleagues think that you are bound to accept the Balfour Commission, and bound to leave things exactly as they were left by that Report, then I should ask you respectfully to say so; to say, that your decision not to recommend any alteration in the law, and not to decide whether or not there is an available future supply from the chalk was come to, not because you heard and disagreed with the argument put forward by the county of Hertford, but because you thought that you were bound to follow the decision of the Balfour Commission.

My Lord, I have only to thank the Commission very much for the patience and courtesy with which you have listened to me, I have nothing further to add, and I shall leave the matter in your Lordship's hands.

Mr. PEMBER, Q.C., called to address the Commission.

My Lord, now I am to have the honour of analysing this evidence as well as I can to you, may I say that I feel in doing it I shall be sure, as it were, to seem to tell the Commission a great deal that they know of their own knowledge and from their own attention to the case; but it is extremely difficult of course to make anything in the shape of a consecutive and careful analysis of the evidence without doing that, and therefore I hope you will accept that word of apology, in case you feel that I am doing that. In the next place, may I say before I begin, that I certainly feel inclined to set myself very considerable limits in dealing with this evidence, because I admit, and indeed I should be prepared to contend, that the investigation has strayed, perhaps inevitably, a good deal beyond the bounds of the reference to yourselves. It is perfectly intelligible to my mind how this has come about. The subject with which you have had to deal is really interesting, its ramifications are almost endless, and one is easily enticed down some by-path of the investigation. Now just to give two or three instances of what I consider topics into which I shall not go, at all events at any great length or more than very incidentally at all. Take such a thing, for instance, as an exact comparison of the rates of London with the rates charged in other towns. I should venture to say that is what I have called a by-path. Another is the present statutory régime of the Lea, and a good deal of what my learned friend, Lord Robert Cecil, has been very carefully putting before you; and the relations between the Lea Conservancy and the water companies. Both of those I consider matters which it is very difficult indeed to consider relevant to the main reference to yourselves. Another is the subject of which we have heard a good deal from time to time, of the quinquennial valuation and its effects upon the receipts of the London water companies. Those, and a good many other topics, it may be necessary for me just to allude to in connexion with others that I think more relevant, but I do not propose to pursue any of them further for their own sakes.

If you had had the whole question of the water supply of London referred to yourselves, and as to what the general policy connected with it in the future ought to be, the matter would have been very different. It seems rather inhuman to suggest it, but for some

reasons I am inclined to regret that you had not, because, as I have had occasion to say elsewhere more than once, I should have liked that the water companies should have had a chance of making their *apologia pro vita sua* which they never had really a chance of doing.

In 1880 it was impossible, because they had come to an agreement with Mr. Smith, and therefore the mouths of their counsel were more or less tied. Later on, before Sir Matthew White Ridley, we were not enabled to go into the question of the adequacy of the supply given to London, either in quantity or in quality; and I think only very incidentally were we allowed to discuss the question of purchase, but certainly the others we were not allowed to discuss at all.

Lastly, when before Lord Rathmore, Lord Rathmore said that we should not discuss the question of purchase before him at all. This is the nearest approach to a chance which the water companies ever have had of, as I say, making their own *apologia*. It is very much restricted in consequence of the conditions of the reference to you, and I propose now to turn to the conditions of that reference, hoping that in limiting myself to the analysis I propose to make of the evidence, on the one hand, my clients will not accuse me of any lack of industry, and, on the other hand, neither you, my Lord, nor any of your honourable colleagues, will accuse me of any want of sympathy or respect for the desire they have had of getting information through a great number of channels.

I cannot help thinking that the main heads of our inquiry, and consequently of what I have to say to you, ought to follow altogether the lines of your reference. Without reading to you what no doubt you have read and thoroughly digested for yourselves, may I say that I should translate the reference to this Commission into the following shape. First you are requested to consider whether a change of ownership and management of the London water companies is desirable, having regard first and foremost to financial considerations, and secondly, to the present and prospective requirements as to water supply within the limits of the supply of the companies. Those are the subdivisions of the first branch of the Inquiry submitted to you. The second is, if such a change of ownership and management is to take place, what form is it to take? Is there to be one new water authority or several? Who is it, or who are they to be; and what are to be the conditions of severance of waterworks if severance there is to be between one and more authorities; and thirdly, if the answer to the first, namely, is there to be a change of ownership and management is in the negative, then is any future control of the companies, which then are supposed to be existent needful, and, if any, what it ought to be, and who ought to be entrusted with it.

There was, of course, a fourth head, which was the possibility of inter-communication and connexion between the eight systems of water supply, and the conditions of that and the legislation necessary to give effect to it, but that I take it you have dealt with in the Report you have already made, and, therefore, I have nothing more to say about that.

I cannot help also saying that I do not think there is much room for the consideration of the woes of Hertfordshire which have been so carefully put before you by Lord Robert Cecil.

Of course it might be held, it is very difficult to see how the connexion comes in, but I can just conceive that it might be held, that amalgamation or confederation of the water companies, if possible, might be a cheaper thing than purchase, and, also, I can just conceive it possible—and I thought so before I heard Lord Robert's almost concluding remarks—that to redress the wrongs of Hertfordshire, if there are any wrongs at all, might qualify to some extent the needs of London by withdrawing from it a certain amount of its estimated future supplies from the chalk, but that, of course, is a very small matter, as Lord Robert has pointed out, and what I have to say about it will be very slight indeed.

To pursue what I am more careful to analyse, just let me say that it seems to me very difficult to dissociate the first two main heads, which were, first of all: Is there to be a change of ownership? and second: If there is to be a change of ownership, what form is it to take? It is very difficult to dissociate them, because, if no one authority were recommendable at all, that is to say, if neither County Council, nor a representative body upon which the County Council would have a

predominating influence, nor a statutory body such as has been suggested, which should not attempt to be representative at all, if no such authority, therefore, were recommendable, and physical severance were also inexpedient, or well-nigh impossible, from its cost and from its complication, I would say, what then? So it is very difficult indeed to dissociate those two heads of the discussion.

Now in discussing the financial result of purchase, which, after all, seems to me to be the backbone of the reference to yourselves, the first question that we ought to set ourselves to answer is: If you purchase, what would you be buying? And that that is the primary question, I think, is evident from the long and the ingenious and argumentative depositions of the earlier witnesses for the County Council, Messrs. H. L. Cripps, Hayward and Gomme. Now they saw, and I see, and I have no doubt my Lord that you see also, that there are three matters to be weighed. First of all the legal position of the companies; next their income; and thirdly the stability of that income. Now I think I can undertake to say, without fear of much contradiction, by the time I have looked into the matter a little, that the first, namely, the legal position of the companies depends on statutes that are fortunately very easy of interpretation; the second, namely, their income, is, of course, a mere matter of fact, and very easily stated; and the third, the stability of that income, depends upon causes which are happily very simple, and which I say, at the outset, work rather for increase than for decrease.

Now, as to their legal position. Here, my Lord, I venture once more a word of apology and almost of entreaty—I hope that, whatever your opinion may be upon the matter at the moment, even if I have the good fortune to find that it agrees with mine, it will not prevent you from allowing me to run with fair rapidity through the various topics connected with the legal position of the companies. And for this reason, if for no other, that this is the first occasion upon which their legal position has been systematically attacked, and I think, therefore, it is an occasion on which it is due to them in common justice that it should be as systematically and completely defended.

Now then, for their legal position. In dealing with that legal position I assume, and I think I am justified in assuming it, the good faith of Parliament. The statutes of the companies, which, of course, are the creatures of Parliament, are perpetual in form. Under them Parliament has, during the last, I was going to say century, but certainly I may say during the last half century, since 1852 from time to time not only authorised and encouraged, but I think I am justified in saying on many occasions has absolutely enforced very large expenditure, because the companies have been forced upon many occasions to spend very large sums of money in works which were not directly productive, but which modern sanitary science and knowledge thought it advisable to put upon them. I say that Parliament, during the last half century at all events has authorised and encouraged and sometimes enforced, expenditure to the amount of no less than 17 or 18 millions of money; and that down to the present time; because during the last two or three years very important financial Bills have been promoted in Parliament by nearly all the companies. Now, these statutes—I do not hesitate to put it as high as this—are the expression of the national word passed to the undertakers as to what their financial conditions should be if their capital were embarked in these undertakings. I assume that that national word will not be broken, and I assume that the conditions which have been so expressed will neither be impaired nor revoked.

Now, the gentlemen whose evidence I am about to consider have endeavoured to explain these statutes away, and these conditions away—to explain this expression of what I call the national word away; but the whole thing is very clear, and I propose to deal with it. I start with the year 1852, which seems to me the proper epoch to start with. The first condition that I mention is one with which you are now all very familiar—that is that by the incorporation of the Waterworks Clauses Act, 1847, they should be allowed to earn 10 per cent. upon their capital as then sanctioned, and subsequently paid up, or such smaller sum as in any special Act of the companies might take the place of the 10 per cent. of the Waterworks Clauses Act. The second condition is that their charges, in order to realise that income, should be made by way of certain specified percentages upon the rentals from time to time of the houses supplied; and the third condition,

no less clear and no less vital to the success of their undertakings as so constituted, is that no outside pressure should force them to compete one with the other.

I assert that these statutes containing these conditions form a regulated monopoly in perpetuity of absolute completeness, and I challenge anybody to show me a flaw in it. The amount of money compensation in the event of purchase, and the financial result consequential on purchase, both depend so essentially on this position that I thoroughly understand the attempts that have been made to undermine it. Mr. H. L. Cripps, who was the first witness, devoted himself very early to the exposition of a theory that the companies were liable to competition, and that Parliament had always sanctioned and assumed that liability. Now, it is perfectly true that at the very beginning of the century the companies did compete, and it is perfectly true that some of them half ruined one another; hence the Royal Commission upon which, I think, Mr. Fremantle sat as chairman—the Royal Commission of 1821. Now, Mr. Cripps altogether, until it was brought before him, ignored the terms of that Report, which was dead against competition of the ordinary character, as Mr. Littler had to point out at a very early period, and you will find what Mr. Littler said on the matter under question 100 of the Evidence, but I do not think I need refer to the words. Now, that Commission of 1821 had all the arrangements among the water companies fully before it. They are all clearly explained in the Appendix to which Mr. Hollams called your attention only so lately as yesterday. They are all fully explained in the Appendix to that Report on page 198, and they were alluded to in the Report of 1821 as measures of self-preservation, and they were certainly not disapproved by anything that I can find in that Report of 1821. And what seems to me even far stronger than that is that from that day down to this—a matter of 77 or 78 years—no attempt has ever been made to do away with them. Now, Mr. Cripps, after a long and ingenious dissertation on the point, says that “Committees of 1851 and 1852 deliberately “confirmed the powers of competition previously “granted.” That phrase is used at question 330. It is no use my turning to the question, because I have already read you the phrase which I copied from it. Now anybody, who had not the misfortune of having become an expert in this contest, would have supposed that in using the phrase “Parliament deliberating “confirmed the powers of competition already given,” competition from outside was meant. It should be analysed by the light of the statutes, which, of course, Mr. Cripps must have read. What he means by powers of competition already given, which were confirmed in 1851 and 1852, really means only the powers of the companies if they chose to compete among themselves. Now we all know what the legislation of 1852 really was. There was none in 1851. It is perfectly true that in 1851 a Bill was introduced providing for the amalgamation of the companies on very carefully elaborated terms, and for the settlement of their rates according to a revisable schedule, which, by-the-bye, was never filled in. A vast amount of evidence was taken by the Committee presided over in that year by Sir James Graham. But no report was ever issued by Sir James Graham, and Sir James Graham, as I think Mr. Hollams told you yesterday, contented himself, when their labours came to an end, by telling Parliament, on the 5th August, that all he could do was to move that the evidence which they had taken should be printed. He told Parliament exactly what evidence was complete; what evidence was incomplete; and he said, “I cannot do more than recommend you to print “the evidence. I cannot give you any opinion that “the Committee have formed on the matter; and all “I can do is to ask for this printing of the evidence,” because, said he, “it would be conducive to the “formation of public opinion upon the whole subject “during the recess.” Well, that as we know was done. Lord John Russell went out of office as most of us recollect very early in the year 1852. Meantime, Lord Seymour, as President of the Board of Trade, had introduced a Bill which contained no provision whatever for amalgamation—that is, after a year’s more deliberation had been given to the subject, but it did contain a clause as to the rate for water supplied to houses under 10L., intending no doubt to fix it, but once more the amount of that rate even was left in blank. The Government went out of office, as I say, in February. Lord John Manners succeeded Lord Seymour as President of the Board of Trade, and he

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got the Bill which his predecessor in office had promoted referred to a Select Committee on the express statement in the House that the Government did not pledge themselves to support it. It was referred to a Select Committee of which I believe Mr. Beckett was the chairman; so also were a number of other Bills introduced by the companies—I think I am right in saying introduced by six or seven out of the whole eight companies. I think Lambeth and Kent were the only ones that were not in Parliament, all the other six were. The Bill of the late Government was introduced to the Committee by the late Mr. Justice Mellor who at that time was at the Bar. What he said about rates I will refer to later. But on the 26th April he brought up 48 new clauses on various topics with which we are not now concerned, and the very first clause that he brought up was a clause which related to this matter of competition.

(After a short adjournment.)

(Mr. Pember.) My Lord, I had stated that the Bill which had been brought in by the Government which went out of office in February 1852 if I am right in the exact date was put forward under the next Government, they not undertaking to give it their support. Now on this question of competition upon which I was speaking to you at the moment we adjourned, let me say that they brought up, as you have already heard, a sheaf of clauses, the first number of which I see is 18 and the last of which is 63. Do not be afraid that I am going to trouble you with any of these, except just to mention the first. On the 26th April Mr. Mellor who was conducting the Bill brought up all these clauses on various topics with which as I say we are not concerned, but the very first of them dealt in one shape with this very question of competition. The marginal note of the clause would not lead you to think so, at first sight it is "each company are bound to supply the whole district over which its powers extend." Now that, of course, would have been competition, because it was perfectly well known that, at all events, several of the companies were not supplying the whole of the district over which their powers extended; on the contrary they had handed over the execution of those powers to other companies whose districts were to that extent intersecting with their own. Now in proposing it, Mr. Mellor, as I think Mr. Hollams told you yesterday, referred to the history of the companies since 1806, their early internecine competition, and their subsequent arrangements, that Report of 1821, and so on. Now while he was arguing in defence of what would have been compulsory competition, namely, if they had been bound to supply the whole of their Parliamentary districts, a member of the Committee, Mr. Barrow, he was, I think, interrupted him and said "am I to understand you to mean that every inhabitant of St. Mary, Islington, say, shall have the power under this clause to ask—that meant to compel—either the New River Company or the East London Company to send a pipe to his house?" Whereupon Mr. Mellor replied in a longish answer, but which was in the affirmative. After prolonged argument and some evidence, the Committee deliberated, and on the next day, the 27th April, they gave their decision on that point as follows:—They said "they had confined the district to that which was already supplied by the company and they would not include that which might be contained in its Act of Parliament." Now we know from the Acts that were passed and the form that declaration took—the clause of course was lost; in fact the whole of this bundle of clauses was lost—the districts were as I believed yesterday, and Mr. Hollams has reassured me on the matter, all left unaltered; but the proviso we have had read so often was inserted in some shape or another in all the Bills. The original districts were left unaltered, the districts of supply were left unaltered and that is why there is a possibility of competition now, otherwise there could not be. But they were left unaltered and the proviso that we know now almost by heart I suppose was introduced into all the Acts. Now that was the principle enunciated by Parliament in 1852, after the question had been before it in two Sessions—before Sir James Graham's Committee and before Mr. Freemantle's, and had been considered by two Governments, the Government of Lord John Russell and the Government of Lord Derby and had been thrashed out before two independent Committees of the House of Commons. The whole subject of competition was expunged from the Public Act of 1852 which

became the Metropolis Water Act of 1852; but the subsequent form of the clauses in the Companies Bills is what we all know, and I venture to say it is quite intelligible how and why it took that form. The possibility of competition between the companies at their own wish, in my humble judgment, could not have been prevented without invasion of their individual rights. It could only have been stopped by the lopping off of part of the districts of the companies; and that therefore was not done, because that would have been a breach of the parliamentary contract between the nation, so to speak, and those who had found the money. That was not therefore done, but Parliament said "I will not prevent you competing if you please." The companies were left free to commit if they chose the folly of earlier days. This they were not likely to do, and, in fact, they have not done it, but they were and they are relieved from anything like pressure from without. Except, therefore, from a development of what it is not too much to call suicidal or murderous mania *inter se*, neither from within nor without is there any chance of competition, and neither from within nor from without have they been attacked (we are now in 1899) for 47 years. The Lambeth and the Southwark and Vauxhall may seem to be, and they only seem to be, a slight exception. As a matter of fact, you have been informed that the maintenance of the low Lambeth rates which are on a level with the Southwark and Vauxhall is simply the maintenance of a very old *status quo* which had begun long before 1852—very old Lambeth rates, which in consequence of the understanding to that effect the company notwithstanding their powers of 1848, have never raised. May I remind you, once more, Lambeth were not in Parliament in 1852. The position, therefore, between them and the Southwark and Vauxhall is what I say it was and is, and it has never grown or spread—that is the point—it has never grown or spread, and it has provoked no imitation elsewhere. The Croydon case is clearly not a case of competition. It was stated with perfect frankness, originally by Mr. Wilkins, who made one mistake, and only one, in a matter of fact, for which he made the *amende* to the Croydon representative, and the Croydon representative therefore was not disposed to go into the box to carry it any further. What Mr. Wilkins said was, "We went down to that low rate, not for the purpose of competing with Croydon, but because we had had a lot of complaints made to us, nominally that the water supply was either insufficient in quantity or bad in quality. We know perfectly well what that meant: that it did not really mean that it was either insufficient or inefficient in one way or another, but, it meant your charges are higher than the Croydon charges are, and if you reduce it down to that point, we will take the water." They knew that was meant, but in order to prove that was meant, and for the purpose of showing it was not bad water that stood in the way, which was far more essential to them than the trifling amount per annum they would make by the supplies, they did, in parts where they could compete with the Croydon Corporation, reduce down to the Croydon level, not for the purpose, as I say, really of competition, but for the purpose of testing the fact whether it was difference of price or difference of quality which prevented the supplies being taken. The result was that the supplies were immediately taken. Then comes forward the representative of Croydon, and says, very naturally, "Now look here, let us understand each other, if you will keep these rates down to that level, we shall not compete with you; you may go on supplying where you are supplying, and we will not trouble you." And they said, "Very well then, we will." That is the whole story. That is not competition. But if it were, I should not care two straws about it, because it would be merely a trumpety instance in the face of the broad fact that for 47 years these eight companies have remained in the main what they were stated to be in 1852, a thoroughly well established and well regulated monopoly. Now I say, therefore, that so far as competition from without goes, their monopoly is complete—absolutely complete—nothing has been done to militate against it in any way; and I should very much like to know what arbitrator, having reviewed these statutes, and the history, would reduce the amount of compensation payable to any one of these companies by a 5% note on account of the danger of domestic competition.

Now it might well be urged, I think, if it were necessary, that the idea of competition is altogether

incompatible with a limitation of dividends. The necessity for limitation of dividends only arises in consequence of monopoly. It is one safeguard against extortion. Competition is another, and it is a different method of safeguard. But the two together are unnecessary; and I do not know—of course I cannot imperil my reputation for accuracy by saying that there is no such instance—all I can say is, I do not know of an instance in which they have been conjointly applied, it seems to me that they are two separate roads to one result, and that the two separate roads are never taken together. Railways have been always open to competition, and therefore their dividends are unlimited. Ours are limited, and therefore we are not liable to competition. It seems to me those are two ways of putting the same argument and drawing the same inference.

But now let us look to the other parts of our armour in which they have endeavoured to show flaws. These are our rates and our capital. Now, the common suggestion of the three gentlemen whose evidence I am more particularly reviewing at the moment, Mr. Cripps, Mr. Gomme, and Mr. Haward—and I will add Mr. Dickinson by-the-bye—expressed in various forms, and supported by various arguments is this proposition: that Parliament may well revise the one, that is, the rates, and reduce the other, that is, the capital. Further, if I understand them aright, in any arbitration the arbitrator might well be asked to consider the possibility or even the probability of both these operations on the part of Parliament; to estimate in fact the consequence of any such operation on the part of Parliament in money, which seems to me very like considering it done.

(Chairman.) And more; they have put in their clause that the arbitrator may deal with the contentions of the parties as fully and effectually as might be done by Act of Parliament.

(Mr. Pember.) By Act of Parliament, quite so, which is practically considering, if he is so minded, that the Act of Parliament is what they suggest in other words; as I put it, very like considering the thing as done, and to reduce the amount of our compensation accordingly. Now, on this just let me first notice a remark of Mr. Cripps. Mr. Cripps says, at Question 86, that all the principal powers of the London water companies were obtained at a time—I am quoting his exact words—when there was no municipal authority in London. Now, that is so far true as a matter of fact that I can accept the statement: but to be worth anything as a suggestion—and as a suggestion of course it is particularly pregnant—he must show that there was something special, and has been something special all along, as a consequence of that, which has crept into the legislation of the London water companies. It means this if it means anything: there was nobody to look after London; Parliament has not done it; and these companies have bamboozled Parliament, and they have got a number of unusual things. Now, I venture to say most positively that there is nothing of the kind to be found in any Act of any London water company. The principle, to begin with, of non-competition is common to the country at large. Once more, I am not going to pledge myself to say that there is no instance in the whole length and breadth of England, Wales, Scotland, and Ireland where you will not find competition, but I do not believe it—such an instance has never been brought before my knowledge, at all events. That is one thing. The principle of 10 per cent. maximum dividend is also common to the country at large, as is proved demonstratively by the fact that it finds its place, not in any one of the London water companies' Bills, but it finds its place in the Waterworks Clauses Consolidation Act, 1847, which applies to the country at large. Later legislation, it is perfectly true, has upon many occasions only allowed 7 per cent. after a time for fresh capital, and sometimes even less. But then, there has been no invasion of right in that, because the words of the Waterworks Clauses Act are—they shall have 10 per cent. upon their paid-up capital or such other amount of dividend as may be fixed by the special Act. And that leaves it open to Parliament to say at any subsequent time, taking into consideration the gradual cessation of risk in this undertaking; taking into consideration the alteration in the value of money, we say 7 per cent. is enough where 10 per cent. was only enough 15 years ago, or 5 per cent. is enough where 7 per cent. was necessary some years ago. So that there is no invasion of rights there. And as soon as ever the idea of the auction clause was invented by some ingenious person, London was made subject to them in a way, I believe, which no other

town ever was. Where then is there anything whatever so far as we have yet gone which shows that the London water companies, in consequence of there being no municipal authority in London to look after the interests of the Metropolis, got anything undue or unusual in their private Bills. Now, I defy anybody to show a single particular in which the London powers of raising capital or paying dividends differ from those of the great companies which have existed in the provinces—differ, that is to say, in favour of the London companies. I defy anybody to do it; and I throw out the challenge openly. So, too, with their methods of charge. It is the common method throughout the country. It is that pursued, not only by every company throughout the country, but by every municipality that is a purveyor of water which has either been purveyors of water in the first instance or has bought a water undertaking from a company. In amount the charges are not dissimilar. I do not propose—I started by saying so—to compare these amounts minutely with those charged elsewhere, because I cannot see for the life of me how it bears upon the financial aspects of purchase, although it might have something to do, if it were not for the amount of invasion of right involved in any alteration of it, with what has been called control. I may say at the same time that I say I am not going into the matter, that I was surprised at the favourable light thrown upon the London water charges by that interesting series of tables which were put in by Mr. Hawksley, interesting no doubt as I say they would have been instructive if you had been sitting there to go into the whole question of metropolitan supply and the general policy of purchase or what not. Now, my Lord, it seems to me that all I have to say is on this point that the London water legislation has been absolutely normal, that it contains no element which an arbitrator with the freest hand ought to set himself to rectify with a view either of diminishing our capital or disparaging or diminishing our income. Our monopoly, our right to certain dividends on our capital, and our powers of charge, are all factors in our value. They must be taken as they are; they must be estimated as they are; they must be bought and they must be paid for, if there is to be purchase, and I think it is essential that I should put that forward as the ground upon which this purchase has got to be made before we begin to discuss what the results of such a purchase would be financially.

Now let us examine—because it is only right that we should—some of the special pleas which have been put forward in support of the contrary view. It occurred to me first to go to this question of revision of rates. Now, the first excuse for proposing such a thing is, that Parliament did not know what it was doing in 1852—that it could not have looked forward to the growth of London values. Now, did it not? Was it so blind? Had Parliament no examples before it; no representative cases of vast increase of value? May I ask if the rental value of London had been statical up to the year 1852, and only began to move upwards afterwards? Have what we may call—as I used the word “statical”—its later dynamics been a perfectly new manifestation? To take one instance, and I will take only one, had there been no transformation, I should like to know, in the annual value of the site of Grosvenor Square since the days when the ancestor of the present owner married Miss Davis? Parliament, of course, knew perfectly well that in giving these rates, to be paid out of the rateable value of property from time to time, it was looking forward to an era of expansion, not only in the extent of building, but also in value. But, says Mr. Cripps, at question 364 and in the following questions—he will forgive me, I daresay if I do not quote his exact words; but if I give the substance of them unfairly he or those who represent him can subsequently set me right. He says, in effect, “You deceived Parliament; you called ‘your rates maxima; you gave everybody to understand that they would not probably be charged, and ‘your counsel, Mr. Serjeant Wrangham, said so.” If you will recollect, he quoted, pretty much *in extenso*, what Serjeant Wrangham had said. Now, I venture to ask you, how could Mr. Cripps have read the discussions of 1852—and I am bound to suppose he had read them all—without discovering what I pointed out; and here I will cite Mr. Littler's words following Question 372, namely, that the rates of which Serjeant Wrangham was talking at that time never passed into law at all; on the contrary, that the rates that he proposed were very

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seriously cut down, so seriously that the company whose particular Bill happened to be before Parliament at that moment asked for time to consider whether they would take their Bill at all, and on the following morning their other counsel, Mr. Serjeant Beliasis, whom some of us remember, came into the room and said: "Since the Committee adjourned, as you may suppose upon so serious a proposal as this, the 'Chelsea Company'—that was the company in question—'have given the proposal their most serious and careful consideration. It is plain, no doubt, that it involves'—I am leaving out a good deal, because I want to get to the point—'a serious reduction upon their water rental. The question, therefore, for us to consider was whether the reduction of water rental was such as would endamage, interfere with, and jeopardise the carrying on of the new works. Accordingly, we took the simplest course we could, which was to ask Mr. Simpson'—that was the engineer—'the plain question, not whether he liked the clause you proposed, but whether those rates being determined on by the Committee, he could carry on his works, and Mr. Simpson has answered simply, 'I can'; but he said, 'I shall have no margin.' Away go, therefore, all ideas of maxima. 'I can carry out the works; but, at the same time, we must look for a further income by the extended works of the company after the new supply shall have been brought in.' He says he can do it, but it leaves him no margin. I said then, and I say it again, that that is the clearest possible indication that they must charge their full rates—the full rates which the Committee had resolved that they should have, and which they must accept. Moreover, as a matter of fact, if I were not contented with the legislation of 1852 on so plain an argument as that, which *ipsa lucet* just see what has happened since.

The companies have been in Parliament many times over, enormous amounts of further capital have been sanctioned without any attempt to alter these rates, although it was perfectly well known they were charging the full rates. There is a suggestion made that it would be no wickedness on the part of Parliament to do it—that is to say, to alter their rates—to revise them, because there had been such a thing as the Railway and Canal Traffic Act. Anything more fatuous than to suppose there is a parallel between the Railway and Canal Traffic Act and any such proposal as this I cannot conceive. There it was, a question of policy. The companies were there accused of a very definite thing—they were accused of crippling trade, and injuring themselves by the high rates which they were charging, to their own detriment as well as to that of the trade and the public. It was a beneficent forcing of their hands, by which, as a matter of fact, I do not think any of them lost. Now just see what the result of that is. They were very careful—as my friend, Mr. Popo, reminds me, for he and I were all through the inquiry before Lord Balfour and Sir Courtenay Boyle—not to diminish the companies' income. Moreover, recollect this—and this must always be borne in mind, because it touches upon the fact of the limitation of our dividend, which is so serious an element in our case—the railway companies' dividends are unlimited. They can recoup themselves. Revise our capital, and how are we to recoup ourselves? We should be confined still to the statutory dividend on a capital which might be quartered or halved, or I do not know what. On the other hand, if the high rates of the railway companies did not stop trade, it might well be that they would have gone on to enable the companies to earn unheard-of dividends. It might well be so. Now, that cannot be the case with us. We are limited by Parliament to 10 per cent., and we cannot earn unheard-of dividends, or anything that Parliament did not intend us to earn. Parliament did intend us to earn the 10 per cent.; and the sooner we earn our 10 per cent., and get our back dividends, the sooner will the consumer begin to benefit. Now, suppose this quinquennial valuation, of which we have heard so much, and into which I have said I did not intend to go except most incidentally—suppose it were ever so profitable, that would be the only effect of it—namely, it would hasten the day when our rates would be reduced. And that is why I do not dwell upon it. I say moreover it is no refutation of what I am saying to urge that Parliament modified our rates in 1852. Now, that is urged by Mr. Cripps at Question 418 and in the following questions—I give the reference merely because I like to make it

always perfectly certain that I am not erroneously citing evidence when the evidence does not exist, and only exists in my idea; you will find it there. Now that is urged as a sort of precedent. I insist that that is no precedent at all. That was part of a general arrangement. The companies got very large capital powers in 1852, with large chances of profit; they got their 10 per cent. dividend; they got their right to back dividends; and last, and not least, they got emancipation from enforced competition—that is, competition which would result from pressure from without—without themselves, I mean. In other words, they got compensation for what may have been for all I know—I have not been careful to look into the matter—some reduction of rate. But, now, what is asked for here is no such thing. It is simply a cancellation or confiscation of right, without any compensation whatever, and it is only made for the express purpose of reducing our value to a purchaser. I say no compensation, because the suggestion that we are to be paid if we are not bought out, by what I think two or three witnesses were good enough to call "A new lease of life," seems to my apprehension rather more silly than artful. Where is the room for the phrase: "A new lease of life"? Our Acts are not terminable, our concessions have not run out. If it were so, we should have nothing to sell. Besides, the phrase is immoral in the mouths of those who use it; and I will tell you what I mean by immoral. They do not mean to let us have a new lease of life in that sense. They do not mean to let us go on interminably if they can help it.

Mr. Dickinson, who had as much to say about "a new concession"—for that was another of the phrases—as anybody else, said something to which I called your attention at the time, and I should like to call your attention to it again. It is at Question 5438. Now I say that that language of his ought never to be forgotten. You said to him, my Lord—but somebody called your attention off after you had asked the question, before you could hear his answer "if you could get all this from Parliament, you might discard purchase with a joyful heart." His answer was "I think the next thing would be to purchase them at the value which they would then bear." Now, Mr. Dickinson is not a gentleman who jokes. On the contrary he said this as seriously as it was possible to say it; I saw that you had not caught the answer, so I ventured to say, "I do not think you caught that answer, my Lord. Mr. Dickinson says 'the next thing would be to purchase at the value which they would be reduced' and then he says: 'that is not our proposition, our proposition is purchase' meaning our proposition is not to let you alone, but that is what he distinctly said—"I think the next thing would be to purchase them at the value which they would then bear." So you see this proposed revision of rates or capital—it is the same thing so far as that goes, is only meant with a view to a fatal destruction of our value, and means simple confiscation and nothing else. Now the other bead of contention with a view to a reduction in the selling value is of course the revision of the capital. The rationale of that is also equally plain. Of course those who propose it know perfectly well that we are entitled to 10 per cent. or whatever else our rate of dividend may be on share capital—on our paid-up capital—that means on our paid-up capital from time to time.

Now Mr. Gomme distinguished himself upon this topic, and I see that you asked him at Question 3774 whether his proposal was really that people—(these are your words which I took down; they express my own idea so thoroughly that you will forgive me for quoting them)—who had had 10 per cent. on a certain capital were to have that capital reduced with a proportional reduction of income. That was your question to him, now what is his answer? It is as emphatic as it was naive. He said "every investor in a company must invest subject to the chances of a change in the law, as well as other risks." That is his answer. Now is it possible that any man with the ordinary degree of intelligence, which I know Mr. Gomme possesses, could forget for a moment that the change in the law such as he was suggesting ought to mean a general change in the law to which all citizens must submit, or all citizens in a certain condition. But a special change affecting individual persons or individual companies only—and only made to rescind or vary private Acts, which would not be improperly described as contracts in the form of statutes made between Parliament and certain investors risking capital in ventures which were not

only of commercial value to themselves, but of public interest and importance—is a perfectly different thing. If I suspected Mr. Gomme of being unable to see the moral element which underlies such a suggestion as that of his, all I can say is that I should consider that he would not be fit to discuss this subject at all; and I am quite confident that he is.

(Chairman.) What was the reference to that answer of Mr. Gomme?

(Mr. Pember.) Question 3774. And to show that that was his real intention, and that he does not seem to see the wickedness of confiscation in itself, notice that he had previously said a very few pages earlier in answer to a question which again, I think, my Lord, you asked him, and which had put the anti-confiscation argument—it is question 3721—he is driven into a corner, and he says: “I suggest that the capital of a water company is not ‘sacred.’” Well, I do not know that any capital of any company, or of any private person, is sacred; but it is so near being sacred that society, so long as it is constituted on the basis which I am happy to say English society is, has declined to consider the question of spoliation. Now, the first form of Mr. Gomme's suggestion was that obsolete capital should be written off. There again, if I may be excused for quoting members of the Commission themselves, I venture to say that it was very well answered by your honourable colleague, Mr. Lewis, at question 3772. I will not trouble you with reading the whole of the words. Mr. Lewis recollects them, no doubt, and can help you if I am wrong. Mr. Lewis points out that if you pursued this to the utmost limit, no company could live; there would be the greatest difficulty in declaring any dividend at all; capital would disappear under it. Now, going to railways again, look at the enormous items which renewed stations, renewed platforms, deviations, straightening of routes—I do not mean putting down additional lines—but where you have got a route which is 40 miles between two towns, and you reduce it to 30, and practically for all ordinary through purposes discard your old route—the straightening of the route representing railway capital in the process of transmutation—there a very large expenditure indeed, to be counted by millions, must have been absolutely wiped away. To take a different instance, ought the Great Western, if its accounts were properly treated, to expunge from their books all the original expenditure in connexion with the broad gauge, may I ask? Or, if you like to put it the other way, ought they to add nothing to their capital account for their change into narrow gauge, which cost them, I think, two or three millions.

(Sir John Dorington.) Where would the capital come from for the new works?

(Mr. Pember.) Quite so. What shareholder, for instance, who had got a 1,000*l.* in the Great Western, if he were told that his share capital was not going to be increased by another 1,000*l.*, in order to make the narrow gauge, would ever have found the other 1,000*l.*?

Now, let us turn to our own case. Supposing our capital expended on our Thames scheme up to the 300 million gallons limit—on which we shall have something to say presently. Let us suppose that. Then let us imagine the nightmare of Sir Alexander Binnie being realised, and that some evil day we are driven off to Wales, is the whole of the 20 or 30 millions of money or more which by that time would probably have been expended, and which would be attributable to a Thames Scheme alone—great storage reservoirs and all the rest of it, filter beds, and what not—would all that have been spent upon these subsidence reservoirs and goodness knows what, all pumping machinery, buildings, mains into our own district, and so forth—would all these have to be considered as non-existent? Then notice also the inherent absurdity of the whole thing, for by that time the capital would have become two-thirds loan capital. I wonder whether that has occurred to these gentlemen. Would you confiscate the income arising, may I ask, from loans as well as that arising from shares? That seems a little staggering. But how could you distinguish, may I ask, between the two? The two would be equally obsolete; and I fail myself to see any reason for treating the loan capitalist better than the share capitalist, or, rather, I ought, perhaps, to put it, for treating the share capitalist worse than the loan capitalist. They each of them have trusted their fortune, so far as they have trusted it, to the same investment, though in different fashions. The one, the lender says, “I prefer

“the pre-preferential 3 per cent. or 2½ per cent. to a preferential 4 or 5 per cent. with a certain amount of risk, or still more to a 7 per cent. or a 10 per cent. with a still more appreciable amount of risk.” But both embark their money in the same undertaking, and that an undertaking, as I have said before, conceived in the public interest; and I fail, therefore, to see why one should be treated better than the other. Both of them would have equally trusted Parliament, and have equally trusted Parliament. Why should the Legislature, by whose intervention alone I insist that the robbery could be effected, say that the one was fairer game for robbery than the other? Why should either be robbed? It seems to me it was expressly to guard against the chance of any such form of confiscation—of any such attempt to interpret the contract (for that is what it comes to), that Parliament said, when it limited the dividends, that they should be paid on the paid-up capital of the companies. It was expressly to avoid that. Parliament saw that if our dividends were limited but guaranteed, the capital upon which those dividends were secured must be fixed and guaranteed also; and that is why it used the phrase “upon the paid-up capital of the company,” which, of course, means the capital paid up from time to time. Of course, in an ordinary partnership it does not matter two straws what you write off. Writing off does not diminish the partnership income in any way.

So with a railway company. If the London and South Western were to halve their capital to-morrow, the only result would be that they would double their dividend on what remained. But the consequences to a company whose dividends are limited are of course obvious, and I say that Parliament saw that consequence—saw how obvious it was and how disastrous, and prevented it by saying you shall have your 10 per cent. on the paid-up capital of the company.

Now, recurring once more to the suggestion that we ought to pay for a new lease of life, I say you would be giving us none at all. As I said before, our statutes are framed in perpetuity. It is not as if we were asking for a renewal of charters that had expired, for instance, as very often happens, or for the prolongation of concessions which had come to an end, which had run out. And may I also remind you that if you let us alone—if you had the power at this moment, not only of recommending, but of saying whether we should be let alone, you would not let us alone for our own sakes; you would let us alone either on the principle of bare justice, or else you would let us alone simply and solely because to buy us would be to expose London to a great financial disaster. Now why, may I ask, because you decline to expose London to one financial disaster, should you force us to submit to another? Where is the logic or the justice in that? You will not forget—why should you—that every share that has been bought and sold during the last 47 years represents capital of the company which has gone to build up the business, and which for the time being has been handed over to the purchaser with all its rights and with all its powers of earning dividends either back or forward, and, of course, at a price which bears the closest relation to that fact. Now it has been transferred to innocent holders for value, and I have always understood that if there is one thing that the law of England will protect, it is the innocent holder for value. May I also—though I admit it is a plea rather of the pathetic order—say that as a matter of fact these shares are mostly held by comparatively small people. As a matter of fact, also, there is very little capital that could be called obsolete—nothing like the amount of capital that could be called obsolete either in a trading company or in a railway. There is very little that has disappeared. Just let me think. Reservoirs do not become obsolete. Land, on the other hand, increases enormously in value. Engines and mains do wear out, but as you have been told over and over again, and I trust you will not forget it, those engines and mains are renewed out of revenue, except such portions as upon renewal represent increase of power and size, and those are partially charged to capital account, and those only.

Now, as to the change of intake—as a matter of fact, that is the only thing that can be called obsolete at all—the old intakes, however, recollect, were sanctioned by Parliament. The changes to the new ones were recognised at a very early period as springing from necessity and from no fault of the companies whatever. But why should one go on arguing about the consequences of such a proposal as this, when the principle that underlies it is so unsound, and what I ventured to go the length of calling so immoral.

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Conscious, I daresay, of their weakness on this point of principle on this question of revision of capital, the London County Council witnesses suggested—or one of them at all events—certain matters of conduct on the part of the companies which they thought would justify the process. Mr. Haward, at question 2258, started the idea and put in a table. It is all very well to say now that he made no accusation against the companies; I must take leave to say that the accusation was made in such set terms that I could not help saying at the time—and I cannot for the life of me see otherwise now as it was originally shaped—that it was nothing else than a charge of fraud. I was rather taken to task for having said so, but I am sorry to say I felt it and I still feel it. However, I was rather forgetting that there was one thing before we come to that which I have called a matter of fraud. Mr. Haward led off with a table, put in at question 2258, in which he said that he estimates that premiums to the extent of 1,835,000*l.* had what he called gone into the pockets of the shareholders since 1872. Suppose they have. What then? They were taken perfectly legally. May I ask, are the shareholders of to-day to be mulcted because their predecessors did something that was perfectly legal 25 years ago? That seems to me to be very curious logic. But of course that is all over now, as we all know. And I notice that Mr. Haward, at question 2293, when asked if he can suggest anything better than the present modern method of raising capital, admits that he cannot, and I do not see how he could. The truth is—and it throws some light upon the financial aspects of purchase—that the cheapest way of trading is to trade with borrowed money if you have got a really good concern. That would be true, even without auction clauses, but with auction clauses it is doubly and trebly true. It is also true that it strengthens—and that is something for my case—the position of the 10 per cent., or the 7 per cent., or the 4 per cent., or 5 per cent preference shareholders, because the capital of the shareholders grows smaller and smaller in proportion to the capital employed, and that is a great security to him. Of course, that is on the supposition that the bulk of the fresh loan capital fructifies—that it is capital which will bring in profit. Now, akin to that claim—for a claim I suppose underlies the statement, or else his statement is really barren and means nothing—a claim in respect of getting something for the 1,835,000*l.*, which he says has gone into our pockets, is a claim for getting rid of, or limiting very seriously the back dividends to which we are entitled. Mr. Haward seems to consider it a grievance that the companies claimed, and that Mr. Smith, in 1890, gave them something very considerable in respect of the claim for back dividends. Now, I am not going to discuss Mr. Smith. I have nothing whatever to do with Mr. Smith. Mr. Haward thought it worth while to waste some five pages of his evidence—and therefore a proportionate amount of your time—on a discussion as to whether the New River Company really ever did claim 15 millions for back dividends, or whether they did not. I do not care two straws what they did. Mr. Smith was perfectly right to give something for back dividends. But whether his figure was right or wrong, I must be excused for saying I do not think it is in the least degree material to this issue. The back dividends represent a right, on the faith of which, among other privileges and rights, the capital was subscribed, and I say that the companies have done nothing to forfeit that right, and it must be paid for. Now, I notice that Mr. Haward claims, at questions 2400 to 2403, to restrict the back dividends to six years. Why, may I ask, to six years rather than any other term? Then he says Sir William Harcourt recommended it. Now, as a matter of fact, Sir William Harcourt did no such thing. He only referred in the most general terms to the manner in which the gas companies had been generally dealt with, as affording a method by which such a state of things as he had been suggesting might be dealt with again with the water companies. I do not think Sir William Harcourt was limiting his mind probably at the moment merely to the question of limitation of back dividends to 6 per cent., because nobody could have known better than he that that one matter was something which the gas companies certainly had to submit to, but was only one element in a very large compromise, probably it was their full value, but at all events it was only one element in a very large compromise, which resulted in the Gas Act of the year in which it was made. But after all if he had suggested this limitation, I do not know that I should very much care. I should like to

profess publicly my great respect and regard for Sir William Harcourt; but after all he is but a man, and I am not perfectly certain that either logic or justice will die with him. But it is worth while to remember all that the gas companies did get in return for the surrender of the back dividends.

Now, once more, I am not going to read it all to you because it would lengthen what I have to say so much—but you will find all that they did get at question 2401, which shows what a totally different operation it was under which as a part of an arrangement this six years back dividends limit was made. Of course, amongst other things, as I heard Mr. Hollams say, they got their monopoly; they got their districting; they got all sorts of things. But as I say I do not want to be tempted into reading the long list of what they did get, because you will find it in the evidence before you. But Mr. Haward calmly suggests that the companies should be limited to six years or else at question 2316, he suggests calmly that they should be made to set off back dividends—that is so funny—against the premiums which their ancestors or their predecessors in title had legitimately received through the raising of their capital by means of shares at par. He says he puts down those back dividends, on what he is good enough to call the assumed legal position at 5,732,000*l.* odd, the sum for premiums received which he would set against them, he gave, as I said before, at 1,835,000*l.*, that is one-third of the amount, forgetting that not one single shilling of this 1,835,000*l.* has passed into the pockets probably of any existing shareholder at this moment, but on the other hand they paid for their shares at a price which represents the present value, and the prospective value, and the chance therefore of getting the back dividends. Lastly, his principle seems to be that the enjoyment or exercise of one legal privilege, even supposing that the shareholders would be of the same generation, which they are not, ought to prohibit them from the enjoyment or exercise of another. It comes to this, that if I happen to have an estate called Whiteacre, that gives you an excuse for taking away another estate of mine called Blackacre from me.

Now, Mr. Gomme, is the great apostle of the revision of capital and the first thing he does is to search for a precedent. He says he finds it for you in the legislation of 1852. He does no such thing. Parliament did revise the capital, but not in the sense of revaluing it or writing it off. Mr. Gomme failed utterly to show anything of that kind. He was asked by several persons, myself among the number, but certainly by one or two of your colleagues, whether he could show any instance, and he could show none. In a very few instances where sums had been questionably added to capital, there I admit Parliament did step in and excoise or curtail those particular items. That is all. He began with the New River. So far as I know, the New River themselves, named a sum which appears in their Act of 1852, as their capital amount; but be that as it may, the amount fixed was a matter of indifference to them, because of course their dividends are unlimited. Then he goes to Chelsea, and it is proved to demonstration that the Chelsea Company only claimed 304,000*l.*, I think it was, and got 300,000*l.*—share capital always being understood. Mr. Lee's evidence is quoted which substantiates that. It is perfectly true that the company in considering the matter with Mr. Lee themselves, a year beforehand had debated whether or not they should ask for a larger amount; but Mr. Lee had told them "No, I think that the fair thing for you to do is to ask for 304,000*l.*," and they got it all except the odd 4,000*l.* in shares. Then he went to the West Middlesex, and I read to him, or read to you, I think, the preamble of the West Middlesex Act of that year in which they recite in their preamble that they had spent 500,000*l.*, and upwards, they put it, and they got 500,000*l.* share capital. I cannot find throughout his examination—and I have looked carefully through it—one little bit of evidence in support of the proposition that in 1852 Parliament revalued and wrote off any of the capital on the companies.

(Chairman.) I am not disposed at all to challenge that statement, Mr. Pember, but I must say I was struck in the evidence of 1852 with the fact that the companies themselves revised their capital, that they struck off what they called obsolete works—a good many thousands.

(Mr. Pember.) One or two of them did undoubtedly.

(Chairman.) Apparently it was not Parliament who did it, but they did voluntarily what Mr. Gomme wants now done compulsorily.

(Mr. Pember.) Quite so, and mind you if you ask me whether I think they are right, I do not. However, that is neither here nor there. I think very few quixotic acts are right as a matter of fact. They come home to roost like your curses, to a dead certainty. But I fail to see anything of the kind. He does show with regard to the East London a number of items improperly charged to capital—and some of them were quite ludicrous, I am quite ready to admit, because it blames nobody that is alive now. A number of items which had been charged to capital had been struck out, and those instances he gives you at question 3709 and the subsequent questions. In fact he shows that Parliament did for the East London what I believe Mr. Lee recommended Chelsea to do for themselves.

(Chairman.) In the case of the East London if I recollect rightly it was back dividends.

(Mr. Pember.) Back dividends and blunders. I think they got an item for blunders, all sorts of things. However, the East London will forgive me for laughing at them, after all it is the East London of 50 years ago and not the East London of today, who would no more think of doing such a thing than flying; and Mr. Lee put it right. After all I do not think it was Parliament did it. I think it was Mr. Lee did it. At all events it was done, but those were items improperly charged to capital and they were not items which had been properly put to capital and which Parliament said you must now strike off. I say there is no trace of the expunction by Parliament in 1852 of a single item that had been *bonâ fide* and properly placed in the capital account of the company; and you, my Lord, or Mr. Lewis, I forget which it was, asked him to point to a single item which had been struck out of capital on the ground of mere obsolescence during the last few years. Of course, he could not do it. But instead of that he straightway proceeds to give a report of the auditor under the Act of 1871 of a number of items which had been improperly proposed to be applied to capital by the Grand Junction in 1876. That is a perfectly different matter altogether, and if they did try to do so the auditor was perfectly right to interpose and stop them.

By-the-bye, while I am mentioning the Act of 1871, it is observable that that does give a power to the auditor to expunge capital, if it is improperly charged, but it does not give the slightest power to expunge capital which has once been properly charged—not the slightest. All it does is to enable you to clear the capital account from items which ought never to have been there. This Act of 1871, therefore, is a most important element for consideration, I look upon it as a most important stage in our history, and as a very strong article so to speak in our charter. Parliament could not have passed the Act of 1871, which gave those great powers to the auditor, without having thoroughly considered what the legislation of 1852 (of which it is really an amendment—an emendation) had done. It is, therefore, in itself strong evidence of a determination of Parliament to put certain limits to itself with regard to the legislation of 1852. You must take it that in 1871 Parliament was satisfied in every point, except that in which it amended it, with the Act of 1852, and it amended it by the Act of 1871.

(Chairman.) Did the Act of 1871 give the auditor the slightest power to review the capital settlement under the Act of 1852?

(Mr. Pember.) Not the slightest.

(Chairman.) Only to review matters that had been charged to capital between 1869, I think it was, and 1871.

(Mr. Pember.) I thought it was 1864.

(Mr. De Bock Porter.) Six years before 1872, I think: was it not?

(Mr. Pember.) What was in my mind was that it varied. There was a schedule which showed the year to which he might go with regard to each of the companies. For instance, the New River he made go back to 1866, the East London he made go back to 1867, the Southwark and Vauxhall he made go back to 1867, the West Middlesex to 1869, the Lambeth Waterworks to 1869, the Chelsea Waterworks to 1864, the Grand Junction to 1868, and the Kent to 1864.

(Chairman.) Yes; but on that, between 1852 and 1871, there had been additional capital powers granted,

I suppose; and of course there came a question whether the amounts charged to capital were properly so charged.

(Mr. Pember.) Quite so.

(Chairman.) That is all the auditor dealt with.

(Mr. Pember.) Yes, I suppose it is something like the *expressio unius* being the *exclusio alterius*—I suppose I am justified in saying that that is the principle upon which I am speaking. Parliament refused to do anything further than that in 1871, or, rather, did not think it right to do anything further. It gave no power to the arbitrator even to review capital, shown by their last capital accounts; and the dates which I gave are those which had been settled by Parliament itself; but it said: "You may see that nothing has been properly charged to capital since we (Parliament) have taken care of it down to the dates I mentioned; after that you look out that they do not do anything wrong. We are satisfied up to 1867, 1868, 1864, and so on." Now, I say that that is a very important stage in our charters, so to speak.

Then, after that, Mr. Gomme goes to those matters which I think I may now afford to pass over very lightly, in which he charges—and that is what I alluded to when I talked about fraud—certain of the companies with acts which were improper, and with regard to which he would claim revision. If he did not mean they were such, I do not think they ought to have been mentioned. His first accusation was against the Lambeth. He made it distinctly in set terms, and therefore I do not quite understand what people mean when they say that he did not make it in the shape of an accusation. If you turn to question 3792, you will find it. He says: "This company, the Lambeth Company, came to Parliament in 1848, and at that time their capital expenditure had reached 313,178*l.* 8*s.* 1*d.*, and the capital declared by the Act of 1848, section 12, was 143,800*l.*; and by section 18, mortgage, 69,880*l.*; and by section 19, 12,320*l.*; making a total of 226,000*l.*, instead of the 313,178*l.*, which the company had expended up to that date. Then ever since that date, so far as I am able to judge by the published figures, instead of bringing forward the 226,000*l.*, the capital of the company, the 313,178*l.* has been perpetually brought forward; the result being, as I think, judging by the published figures—subject to any explanation that may be given—that, instead of the 226,000*l.* being included in the capital, 313,178*l.* was included in the capital." Well, a grosser act was never committed by any company if that was really done. He repeats that statement in the summary table handed in at question 3731. As far, therefore, as I can formulate his original charge, it was this: "You said in 1848 that your capital expenditure had been 313,000*l.* odd, but after having heard your statement, Parliament fixed your capital at 226,000*l.*; but you have perpetually brought forward the larger amount." I asked him to make this out. Well, he cannot make it out, and he really does not make it out. He says he judges by published figures, which put down our capital at the present moment at 1,851,000*l.* Where is the sequitur between that fact and the fact charged, that we brought up 313,000*l.* at a particular date instead of 226,000*l.* I asked him how he knows that this excess item is in that amount of 1,851,000*l.*, and his only intelligible answer is at question 4353, and this is the only one I need go into, so, perhaps, I may just as well turn to it. I asked him to try and point it out, and he says: "I point out that in 1848 the expenditure was returned at 313,000*l.*" to which I said: "Known—we all know that," and he replied: "And the capital by the Act of that year was declared at 226,000*l.* In 1856, which is the next information we have about the capital expenditure of this Company, the expenditure was returned at 608,985*l.*, and the capital declared by the Act of that year was 504,666*l.*—still below the authorised amount. In 1867 the expenditure reached 866,000*l.*, and the capital declared by the Act of 1869 was 837,000*l.*, gradually creeping up to the capital expenditure. In 1871 the audited expenditure was 933,000*l.*, and the capital was 935,000*l.*" That does not express much to my mind, I admit. Then he says: "Now, in all those cases of bringing forward of capital, my suggestion is, that instead of the 226,000*l.* being included in the expenditure, the 313,000*l.* has been included in the expenditure." Well, all I can say is, if you can understand that puzzle of figures and phrases, I cannot. However, I insist that what he

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says there is nothing but gratuitous surmise, and I say still, the charge involved in what he said is nothing less than the charge of fraud. But the funny thing is, that immediately after, he finally admits that we only pay dividends upon the statutory amount, 226,000*l.*, and if that is so, I ask what would be the sense of bringing forward 313,000*l.* Both you, my Lord, and I, have had the honour of doing the same thing—taking the charge to be that we were paying on an extra 87,000*l.*, which is the difference between 226,000*l.* and 313,000*l.* But if we do not, it seems to me that the perpetual bringing up, as he calls it, is as objectless on our part as his charge seems to me to be objectless on his, unless he wants to say that we committed a fraud upon Parliament. As to the charge against Chelsea, he says there, that in 1852 their capital expenditure was 364,000*l.* odd; that Parliament fixed their capital at 300,000*l.* Mind you that 300,000*l.* is only shares; and he says, although Parliament fixed their capital at 300,000*l.*, that in their first audit they put down their expenditure at 364,000*l.*, and he says distinctly that they paid dividend on that amount; there is no doubt about that. He does not reserve himself, as did with the other company, in saying that they only paid dividends on the 226,000*l.* On this Sir John Dorington puts this question to him: "Are they paying their dividend on that 364,000*l.* now," and he says: "Yes they are. (Q.) As well as the 300,000*l.* which they were allowed?"—(A.) Yes." Now that is as clear as possible. If that is not a charge of fraud, I do not know what is. However, Mr. Rickards, who appeared for the Chelsea Company, explained with conspicuous clearness, that that 64,000*l.* odd, first of all, is only a sum of 80,000*l.* loan capital which Parliament actually allowed in 1852, and it was over and above the 300,000*l.* share capital which had been previously spoken of, and hence he proved, therefore, that he does not receive dividends at all, but only the amount was 4 per cent. or 4½ per cent., whichever it was, for I have forgotten the rate at which the bonds were raised. Mr. Gomme admits his error frankly enough. At question 4408 Mr. Rickards put to Mr. Gomme, after having cross-examined him upon the point: "Then it is not correct to say they were paying their statutory dividends on 364,000*l.*," and Mr. Gomme is obliged to answer, poor gentleman, "clearly not." Well, that is perfectly clear, and I may say, as I see you yourself did very shortly after that answer—"Now we have disposed of all these items of excess," and I rather flatter myself that we did.

Now, the charge against the Southwark and Vauxhall is a similar one; but it is very small—it only amounts to 40,000*l.* He formulates it as he formulated the others, and if anybody understands either it or the various explanations that have been given about it I congratulate him; I confess I do not. But I do not think I am bound to puzzle my brains about it, in the first place, because it is so small, and if it is no better founded than the other two were, then it is very ill-founded indeed. The only thing I say further upon the subject at all of these alleged improprieties is, that they amount to rather over one per cent. on the capital of the eight companies. But as I understand now, at a somewhat late hour—but I am very glad to have it even at a late hour—all charge of impropriety is withdrawn; and, if so, the sole point is, Will you consider that there can be any weight given to a proposal to re-review, so to speak, the legislation of 1852—to go behind and do a vast deal more than was done by the legislation of 1871 in the question of altering the capital accounts of the various companies after all that I have told you of the effect it would have upon them, and the injustice it would be to the present holders. So much, therefore, for all those various attempts that have been made to what I call undermine the position of the companies, or to make out that either in capital account, income, or stability of income, they are not what they would seem to be at first sight.

Now, to the suggestion of expenditure ahead of us, which, of course, is perfectly legitimate, I confess that I attach no apprehension at all. I have no doubt whatever that the consumption of water will overtake all prudent—mind, I use the word prudent—all prudent provisions for its supply. I have no doubt that it will even go to this length—that it will recoup expenditure not in itself directly remunerative—I have that confidence—even if such expenditure were, to a certain extent, to retard the realization of maximum dividends, or back dividends, as the case may be. I think the day must come when both results would be

achieved, and I think that any clear-sighted and fair-minded arbitrator must recognise this certainty and must appraise it. Even the London County Council's advisers insist that the growth of income, when they are talking of their own far larger expenditure, will be sufficient to meet all claims arising out of their own schemes; and *a fortiori*, it will meet all that will arise out of the much more modest schemes of the companies, for they are far less costly, and from the very nature of them they can be far more gradually completed.

I say, therefore, that anybody who buys will not only pay, and have to pay, for our present income, but they will probably have to pay a large sum of money for the prospect of a very substantial increase in it.

Now, there is a farther item for which, I think, a purchaser will also have to pay.

Now, do not let anybody accuse me of ever using the phrase "10 per cent. for compulsory purchase." Nobody objects to that form of expression more than I do. There is nothing about it in the Lands Clauses Act. I hear constantly that arbitrators have got into the habit of awarding 10 per cent. for compulsory purchase. I have nothing to do with whether that is true or false. I have never sat as an arbitrator myself, and I have never pierced into the mind of an arbitrator; but if they have really done it, in form, at all events, they have been undoubtedly wrong; but for all that, their bad habit of form may cover something that is quite justifiable in substance. A man is entitled under the Lands Clauses Act, and he is entitled altogether when he is dispossessed, not to the mere value of his property, but to full compensation for disturbance in it; that is why the word "compensation" is used in the Lands Clauses Act, and this covers more than mere value. I can well understand that other people may hold—and I do not know what I should do myself if the whole thing were thoroughly put before me—but it may well be held that something ought to be given for mere disturbance. It is possible that that may be one of the reasons why "compensation" and not "value" is the word used in the Lands Clauses Act. But apart from that, which is, perhaps, debatable matter, there is a vast deal that has to be covered by compensation. A man must re-invest, as we all know, and have all heard. That involves expense; it also involves time, and consequent loss of income. Then, further—and this is a thing which has been touched upon once or twice, but which, I think, ought to be insisted upon very carefully—nothing is more common than for the ordinary investment clauses of a will or money settlement to permit moneys to remain in their then present state of investment, but in the event of the security for any reason coming to an end, then the trustees have to fall back upon the provisions of what may be, and mostly is, an extremely cautious and tightly-drawn investment clause; and they have to turn round and invest the money in what are known as trust securities. Now that, of course, would very easily involve the loss of a quarter or a half per cent. to the *cestui que* trust however good was the security which then came to an end. In respect of this possible loss of income—besides what I have mentioned about expense of reinvestment, loss of time, and all the rest of it—an addition would have to be made, which might well come to 10 per cent. on the purchase money, or even to more. For ought I know, that is why, by a rough and ready means, arbitrators may have come to give 10 per cent. on compulsory purchase. But on this occasion what I am now saying is enhanced by the fact that the holders of these water shares are obviously persons who like a very high class security. They are held, as we are told, for a long time; people when they have once invested in them, do not change, for that reason. And recollect that the placing over a comparatively short space of time of a sum of money which for the purposes of argument I may put at 40 millions, upon the market, for re-investment in high class securities, would tend temporarily to raise the price of those securities, and probably very seriously.

Now, that is a sketch of what I put before you, my Lord, of the conditions under which this huge purchase will have to be made so far as the investment which has to be bought is concerned.

(Chairman.) If I am not inconveniencing you, Mr. Pember, by interrupting, let me put this. You say here is a trustee who holds these water shares; they bring him in 3 per cent.; if he is dispossessed by the purchase of the companies, he is tied up, we will say, by his trust deed to buy consols only—I take that as an example—

(Mr. Pember.) Yes, take that as an instance.

(Chairman.) Consols would only bring him in 2½ per cent. at the most.

(Mr. Pember.) That would mean a loss of ½ per cent.

(Chairman.) And not so much as that at present prices. Therefore, you say the Arbitrator would do fairly if he gave him money enough to buy so many consols as would produce the old income on the capital. But then the Arbitrator has got to award for the whole company at a time, and there are a great many people who are not trustees; and it does not seem quite fair that because there are half-a-dozen trustees who would lose if they did not get, say, 15 per cent. added to the purchase money, therefore you should give that 15 per cent. to all the other shareholders.

(Mr. Pember.) I am only saying there is one reason—I do not say it is absolutely conclusive upon the whole matter—but there is one reason why it may be right to give something over the mere value of the undertaking. But mind you, if I were put to it as a matter of morals I should suggest that rather than do injustice to ten people you ought to be a little too good to the other 90.

(Mr. H. W. Cripps.) I should like just to say at this stage of your argument that I have never during the whole course of this matter interfered with any question which I thought in any way could be prejudicial when you get to arbitration or show what my opinion was when this matter went to arbitration. Therefore, I have often not answered a great deal that has been said. I think I understood you to say you have never been at an arbitration. I have been at a great many.

(Mr. Pember.) I have been at arbitrations, but I said I had never been an arbitrator.

(Mr. H. W. Cripps.) I beg your pardon. I know very well all the arguments that are addressed to arbitrators, and it is very difficult to say anything at all here which might not very likely be quoted afterwards. It might be said the decision was given in this way. Now, if this is to go to arbitration at all—which it may very likely do—that is all I say at present—I think it is not desirable for us to make any observations whatever about the way in which the arbitrator would deal with the question—but leave it entirely and totally to him to act. For that reason I have never said anything at all about what my own opinion is about arbitration.

(Mr. Pember.) Quite so. And recollect that all I am doing now is to show what they will have to pay for what they will have to buy. Now, I say, that is the sketch that I present to you of the conditions on which this huge purchase will have to be made. Sir John Lubbock, a man of great reputation, a financier, and an old county councillor, says it will prove a financial mistake. That he says largely at 5722 and the following questions. I do not follow him into his figures at the moment, because I do not think it necessary. For the moment I prefer to deal with the matter more generally, and I would like to say a word, if you will permit me, on the abstract possibility of a profit to the community on a purchase under such conditions as these, and I will therefore ask the question, Can the community regarded as a whole make a profit out of such a purchase as that of these water companies? Now, as a matter of theory, I do not think it can; as a matter of practice, I am certain that London will not, on account of the various circumstances surrounding the property after it gets into the hands of the London County Council—if it ever gets into them—which I should like to call your attention to later.

Now, in answering that question, can the community regarded as a whole make a profit of such a purchase as that of these London water companies; let me start with a distinction which I think it is right to bear in mind. If a company be bought in its infancy, then I am ready to admit that there is room for the suggestion of such a profit, because the investment of a large share capital is by such an early purchase, so to speak, nipped in the bud; it is forestalled. Even in such a case I can see, mind you, that the question is still arguable. But let me admit, at all events, for the purposes of my argument, that if a town takes the original risk, and no slight risk, as the early history of these companies has shown, and if the result is successful, then the success rests with the town instead of with the company; and I will admit that it may be represented in the form of a money profit—I admit that for my purposes. Now, it is to be observed that in all the great purchases of water undertakings this is true—that they were made at an early point in the water history of the towns

making them. The water undertakings of Liverpool, Manchester, Birmingham are four or five times as great now—and I understate it—as they were at the dates of their purchase. There is a most interesting table, my Lord, put in at question 3538, which I think I will ask you to look at. It was put in by Mr. Gomme; and on the principle that it is not only lawful, but well worth while, to be taught by an adversary, I should just like to call your attention to it. Take Birmingham; the amount paid to the company by Birmingham in 1876 was 1½ millions. The capital expenditure on works since then has been another 1½ millions, and may I add that there is about 5 or 6 millions more to come, because they are now only on the fringe of their expenditure, on the Elan. Now let us go to Bradford, which is the next one I notice. Bradford paid the company that it bought out 171,000l.; since then it has spent 2,477,000l., and its total expenditure is 2,600,000l. Heaven knows how many times greater than 171,000l. before it bought. Now let us take one or two more. Cardiff paid the company that it bought out 323,000l. The present expenditure of Cardiff is 1,159,000l. Leeds gave 225,000l., and the present expenditure of Leeds is 1,800,000l. Liverpool gave half a million—rather more; the present expenditure of Liverpool is a shade, and only a shade, under 5,000,000l.—ten times the amount. Manchester gave a little over half a million; the present expenditure of Manchester is just under 6 millions—12 times as much. One more I see I have noticed—Oldham, in which case 131,000l. was given; the expenditure now is over a million—nearly ten times as great. My learned friends are rather angry with us because we will not go to Scotland. Let us take a trip to Dundee. Dundee gave 317,000l.; its present expenditure is 900,000l.—getting fast on for three times the amount. Glasgow gave 674,000l., and its present expenditure is 3½ millions.

But not only were they bought, therefore, in the comparative infancy of the undertakings, but they were bought, too, at a time when the raising of the capital by shares bearing a high rate of interest was still allowed. Therefore they could, as I say, nip in the bud, and forestall the raising of capital at high rates. They were bought long before the invention of the auction clauses and the application of premiums in reduction of capital. There was, therefore, room in all those cases, and abundance of room, for the interception of growth, of which I was speaking, and of the consequent transference of profit. But London has left it too late. Those are the words that ought to be written across the application of London for buying these water companies—*Too late*. The share capital account of the companies is practically closed, and henceforth Parliament, I have no doubt, will insist upon the raising of capital by debenture stock and the auction clauses. For, that is the way, my Lord, in which Parliament has recognised two things—first, the alteration in the value of money; and, secondly, the virtual extinction of the old risk attaching to these London water undertakings—that change from allowing high-priced shares into allowing debenture stocks and auction clauses—that is the way, I say, in which Parliament has recognised two things: first, the alteration in the value of money; and secondly, the virtual extinction of the old risk attaching to these London water undertakings, just as in the old days it recognised an opposite state of things when it fixed 10 per cent. and the back dividends. Henceforth, I insist that the only advantage to the companies in fresh expenditure will be indirect, namely, the feasibility of thereby earning full dividends on old capital on which full dividends have not been paid, and the realisation of back dividends where they have not yet been realised. Every farthing earned beyond that will, under the new régime, if the companies go on, go to the public in the reduction of their water rents (I prefer to call them water rents rather than water rates), except, mind you, the 1 per cent. for management which I admit Parliament gives us, and which I do not think is a farthing too much.

(Mr. De Bock Porter.) But what about the New River?

(Mr. Pember.) The New River Company is a thing absolutely apart. I quite admit that the New River Company can go on for ever and ever paying whatever it pleases or whatever it can. The New River Company of course in that matter is a thing apart. I am dealing of course now with the ordinary companies. Now I say Parliament, recognizing the fall in the value of money and the extinction of risk, has given that protection to the public which is involved in that change in the method of raising money, and in giving

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that has given to the public—and I cannot state my conviction in that matter too clearly—the only protection which it can give against loss, the only protection which it can give without invading the rights of property. It is the only protection that Parliament can give to the public compatible with keeping faith with the water companies. In fact, I insist that it has forestalled purchase as far as purchase can be forestalled without doing a gross injustice. Then I was going to say—and this is the last remark

with which I will trouble you for the moment, let us suppose a purchase made. Very well, if made, I say not only will the present income of the company, but the indirect effect upon it of new expenditure have to be appraised and paid for.

Then I propose to work out, if you will allow me next time, I have the pleasure of addressing you, two concrete instances of the purchase of a company on a statical or dynamical income, which I think may be worth listening to.

[Adjourned to Monday next at 12 o'clock.]

SIXTY-FIRST DAY.

Monday, March 20th, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

SIR JOHN EDWARD DORINGTON, Bart., M.P.
SIR GEORGE BARCLAY BRUCE, Kt., M.P.
ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
HENRY WILLIAM CRIPPS, Esq., Q.C.
ROBERT LEWIS, Esq.

CECIL OWEN, Esq., Secretary.

Mr. Balfour Browne, Q.C. and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and the Southwark and Vauxhall Water Companies.
Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
Sir Richard Nicholson appeared for the County Council of Middlesex.
Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. PEMBER, Q.C., called to further address the Commission.

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My Lord, do not be afraid that I am going over any of the ground where you so kindly listened to me while I was speaking on Tuesday, if I just remind, ourselves, I was going to say, for the moment, that when we broke off I was discussing the question whether a community as a whole could derive profit from such a purchase as is proposed in this case, and that from a theoretical point of view. I had admitted that purchases made in the comparatively early history of water supply, before the increase of share capital had come to an end, might, perhaps, be held to be profitable, and I cited the cases, you will remember, of Glasgow, Birmingham, Manchester, Leeds, and other towns; but I had ventured to suggest that the era of raising capital by loan and auction clauses having supervened in London, there was no room for that advantage in a London purchase now; and I had just said that I proposed, with your permission, to test the theoretical argument by a couple of concrete instances, which I now propose to take, and ask you to let me work out; I shall not be very long over them. Now, let me suppose for an instant this purchase was going to be made, and, in the first instance, that a company with a net income of 100,000*l.* a year was going to be bought. It comes before the arbitrator, and I will treat that company as being number one. Now, if there were no chances of increase in such an income as that, and no chances of decrease worthy of consideration, it is obvious that the arbitrator would treat that income as, humanly speaking, a certainty. If there were no chances either way he would multiply it in consequence by a very large number of years' purchase, and in fixing the number of those years' purchase I suggest that he would, and, indeed, he ought to go through exactly the same sort of mental process which a lender would go through if a

borrower, of whose solvency he was absolutely certain humanly speaking, should propose to grant to him an annuity of 100,000*l.* a year. If such a lender would give for such an annuity proposed to him by such a borrower as that, 35 years' purchase, say, because he felt certain of obtaining it, then I say, by parity of reasoning, an arbitrator ought to give, and, indeed, would give, 35 years' purchase of such an income for the same reason, namely, that it would be certainly realised by the purchaser. In other words I take for the purpose of such a case as that "income" and "annuity" to be convertible terms. Just let me put it again. An absolutely solvent borrower, whose money is worth 35 years' purchase, comes to an absolutely solvent lender, whose money ought to be worth the same, and the one says, "Buy of me an income of 100,000*l.* a year." Then the arbitrator ought to say that the rate at which the absolutely solvent person could borrow was the rate at which the absolutely solvent person ought to lend to a person equally solvent.

(Mr. De Bock Porter.) Have you any experience, in any of the cases you have examined, of any arbitrator having given anything like such terms for redemption?

(Mr. Pember.) I could not answer that question, but you will please understand that I merely took the 35 years as an arbitrary figure. I should just as soon have taken 25 or 30 or 40. I merely took that as a figure *x*. If he considers that the absolutely solvent lender is worth *x* years' purchase—that he can borrow at that—the absolutely solvent borrower is worth the same. That is all. So please do not think that I put the figure of 35 years' purchase as a sort of *ad captandum* figure to suggest what the arbitrator would

give. Now let me put it in another phase. The perfectly solvent purchaser of a perfectly sound security would, or ought to pay for it exactly the same rate as he himself could borrow the money to pay for it. That is my contention. Now in such a transaction as that, I submit that their could be neither profit nor loss—neither one nor the other—unless some circumstances afterwards developed which falsified the calculations of the arbitrator; and in that case there would have been a faulty award, but the theoretical argument, of course, pre-supposes perfect instances. Now that is how I deal with what I may call a perfectly statical income. Now let us take the other instance, and that is of a company with the same income—say 100,000*l.*, but which income first of all does not express its full limit of development, and on the other is earned in view of appreciable chances of decrease; that is a fair way of putting it, I think. Now it is clear to my mind that in such a case a perfect arbitrator would have to consider, to contrast and to give effect to contrary factors of change. He must strike the balance between these contrary factors and eventually he must raise or depress, as the case may be, the 100,000*l.*, to a point which, if it is a proper adjustment, would once more represent, humanly speaking, certainty. For instance he would turn the 100,000*l.* into 80,000*l.*, because he thought that the chances of decrease predominated, or on the other hand he would raise it to 120,000*l.*, because on the balance that was his opinion; but, the adjustments once made, he gets to the same point of absolute certainty, if his award is perfect, which the statical income of 100,000*l.* that needed no adjustment was at before. I am not very fond of phrases, but still I think I express my meaning if I say that he would express the dynamics of such a company in the terms of a statical figure, the statical figure being 80,000*l.* or 120,000*l.*, as the case may be. In other words, he would end by stating what would have, for all purposes of inquiry, to be considered a certain income. Now this done, all that I said just now with regard to the former instance would become applicable, namely, that the perfectly solvent purchaser of a perfectly sound security should pay for it at exactly the same rate as he borrowed the money to pay for it. The words “perfectly solvent” used of the purchaser, and the words “perfectly sound” as used of the security are, or ought to be, exact equivalents, and should be expressed or measured by exactly the same percentage; and that is what I meant when I used the figure which your honourable colleague alluded to of 35 years’ purchase. I do not care what the number of years is. Once more in transactions of that kind, perfectly conducted, there can be neither profit nor loss. The business in the hands of the purchaser may decline or it may increase. The net receipts may go up or the net receipts may go down; but if the arbitration has been really perfect, that contingency, whichever comes about, will have been found to be represented finally in the capital amount originally paid, otherwise the vendor will have received too much or too little, as the case may be. Now that seems to me to be the position with regard to profit and loss upon a theoretically perfect arbitration; but it may be urged—and I feel bound to deal with the point—that however that may be, the rates in London are an ampler fund for security than an income of a comparatively smaller amount, however in itself secured. Now I answer, if that extra amplitude of rates in London as a fund for security is above and beyond sufficient—if it be more surplusage, in fact—it is worthless; it cannot be worth anything; it cannot make certainty more certain. To take an image which I think is a fair one. A ship with 20 feet under her keel is as safe from grounding as if she had 500. There is enough, and the market will find that out, and know it as well as we do. But if the difference be not mere surplusage, if there really be anything which represents greater security, then I say that what is really suggested is that the income of the company bought is not quite secure; and if that is the real substance of the difference, then all that element will have already been taken into consideration by a perfect arbitrator, and taken into consideration when he was reducing the income to a figure which I say represents certainty.

(*Chairman.*) I do not like to interrupt you; I am afraid of embarrassing you, but I cannot quite follow that step in your argument in which you say that the purchaser ought to pay exactly what he can borrow the purchase money at. I should have thought the rule for the arbitrator would be to look at what this

certain income was worth to the seller. Then we have it in evidence that the seller for his 100,000*l.* would not get above 35 years’ purchase.

(*Mr. Pember.*) Oh, that I do not know.

(*Chairman.*) All these companies raise their money at 3 and a fraction per cent. Therefore if the seller were to come into the market with his shares, he would not get more.

(*Mr. Pember.*) It is less than that, my Lord; it is a great deal less than that.

(*Chairman.*) Is it?

(*Mr. Pember.*) Yes.

(*Chairman.*) Yes, the debentures I know sell at less but his shares sell at 3 per cent.

(*Mr. Pember.*) My Lord, I will deal with that aspect of the case which, of course, is one that I do not wonder at being present to your Lordship’s mind as it is certainly present to my mind—

(*Chairman.*) Just let me finish. The purchaser could borrow at 2*l.* 12*s.* 6*d.*

(*Mr. Pember.*) I will deal with that point.

(*Chairman.*) Does not he save the difference?

(*Mr. Pember.*) I promise I will deal with that point.

(*Chairman.*) I beg your pardon for interrupting you.

(*Mr. Pember.*) Meantime I take the theoretical case of an income which in itself, to start with, was certainty; and secondly, of an income which may be reduced to certainty; and then I say if you reduce the income to certainty you make that as perfectly sound as the man who is going to buy is perfectly solvent, and if the one man can borrow at—I do not say what it is—at 30 years’ purchase, or 33 years’ purchase, or 35 years’ purchase, the other ought to be bought at the same figure if they are both equally good, so to speak. Now with regard to any difference of value that there might be supposed to be between the security of the water income of the London water companies and the security of the London rates, let me put this to you. Both incomes—for of course the London rates are income—both incomes, the income, that is to say, of the water company and the London rates depend equally upon the maintenance of the position and of the growth of London. If London continues to grow and flourish, then my income and the progress of my income, so far as its progress is possible, are a certainty—as great a certainty as the London rates; not greater but as great. If London does not continue to grow and flourish then the security of its rates will tremble to the full as much as my income will, for both equally depend, as I say, upon the same security for their growth—the growth or the dwindling of the one connote the growth or the dwindling of the other. But then it may be urged—and now I come gradually to deal with the point which the noble Lord, in the chair, has put to me—that the company’s shares may be brought to pay rather more than the London County Council Stock—that is that they are worth rather fewer years’ purchase, and therefore there is room in that for a substantial difference, and a difference is, of course, the same thing as profit. Now, my answer is, first of all that the price of the shares alone is not a complete test of the credit of the company. You must look at the loans as well. And now may I venture to ask you to turn, for a moment, to the especially useful table which was put in by Mr. Haward at question 2568. It is a table which gives “(1) the total nominal capital of the London water companies on “the market; (2) the value of such capital, share, and “loan, at Stock Exchange prices; (3) the yield, per “cent., to an investor according to the last year’s “dividends, and interest on, and market prices of the “stock.” Now that, to my mind, is a most instructive table. Column 11 gives the rate at which every class of security will pay an investor. Now averaging these together you will find that they only work out, as the table says itself at the bottom, at a return of 2·95 per cent., under three. Now mark, if you please, my Lord, that that includes every class of capital from the 10 per cent. share to the latest debenture stock. Every one of them are there included. And you get a most interesting fact out of that table; first of all that, even including our 10 per cent., and 7, and 5, and 4½ per cent. preference stock, and so on, so great is the credit of the companies that they absolutely represent along with their debenture stock only 2·95. But it goes a great deal beyond that. You will find that the price which an investor pays by purchasing every

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single class of debenture is given and that is also in the same column 11. Now I have been at the trouble of seeing how many of these debenture stocks there are, and I trust, my Lord, that you will take it from me that, as a matter of fact, there are 16. Now I have taken down the prices at which they are all purchasable at this moment, and when I say this moment, of course I mean at the moment this table was taken, and they are very instructive. I see that there are two of the Chelsea, there are two of the East London, there is one of the Grand Junction, there is one of the Kent, there are two of the Lambeth, there are two of the New River, there are three of the Southwark and Vauxhall, and two of the West Middlesex; and the percentages that they pay a present investor are 2·81, 2·75, 2·73, 2·64, 2·66, 2·63, 2·63, and then I have not mentioned some higher and some lower.

(Chairman.) Do those figures all appear upon the table?

(Mr. Pember.) They all appear upon the table—every one of them—of course I do not want to say my arithmetic is a bit more infallible than my argument; but I have added the 16 percentages together, and I find that they make 43·88: that is my arithmetic, I divide that again by 16 to get the average, and I find it is 2·74, which works out at 2l. 14s. 9d. Now that is the price at the present moment at which these companies can borrow, and I should ask you to bear that figure in mind when dealing with the possibility of the London County Council borrowing cheaper than the companies. No doubt, to a great extent, it was in your Lordship's mind when you were kind enough to ask me the interesting question which you did a while ago.

(Chairman.) Yes.

(Mr. Pember.) Please, my Lord, do not think that you can by any possibility interrupt me. You can only do me a service by getting at the bottom of what I am saying, because I take such elaborate notes in matters of this kind that I cannot be put out, and therefore I am only too glad to be either corrected or to be asked for an explanation. Now you get an average figure of 2·74 which, as I say, is somewhat under 2l. 15s. per cent., or 2l. 14s. 9d., to be accurate. Now, then, Mr. Gomme or Mr. Haward—I think it was Mr. Haward—only claims to be able to borrow at 2l. 12s. I will give you the reference presently.

(Chairman.) Yes, I have got that figure in my mind clearly.

(Mr. Pember.) The 2l. 12s. is without taking the sinking fund into account. But of that, and what our credit would rise to if we were left alone, perhaps you will allow me to say something more in a minute or two. But that is the price at which on that day of February 1898 the companies could borrow. Now it may be suggested that the prices of our debenture stocks are as high as they are (I like to take every case I can conceive against myself) because there is a margin of share capital behind them. I answer that what the lender really goes upon is the margin of income. He, indeed, takes the share capital and the dividend paid on it as evidence of that margin. But that is all. If he knew otherwise that the margin existed—if he knew it for instance in this way, by the annual application of the surplus to the reduction of rates—I will give that as one instance of the way he can know it—of course stockbrokers know it fast enough—if he knew of the margin otherwise he would be just as well satisfied. What he will lend on will be the water income of London available for the payment of his interest.

Now, I should like to take just one instance of a very large trust that there is where there are no shares; and I take it for this reason, that, at first sight, if anything, it would tell rather against me than for me, and I do not mind taking a case of that kind. I allude to the bonds of the Mersey Dock and Harbour Board. Now some time ago I just looked into one of the lists to see what the Mersey Dock and Harbour bonds could be bought at. There are no shares there at all. My learned friend Mr. Pope knows more about their affairs than I do, because I think he has the honour of holding their retainer and I have not; but I have had to do with them from time to time, and I know pretty well that they owe at least 20 millions of money, and I think I understand it when I say that. There are no shares as I think I have already said. I find you could buy them a month or so ago to pay almost exactly 3 per cent. Now mark that. Although Liverpool may

decay as a port, the trade of the country that keeps Liverpool going may go on and may be diverted to other ports. For instance, I daresay it will not please some of my friends to hear me say so, there might be a diversion to Manchester. There is a very considerable diversion to Manchester, which is growing every day, there might be a diversion to Fleetwood. There might be a diversion to Glasgow. There might be a diversion of some trades, though you will hardly think it, to the ports on the east side of England; but at all events there may be a diversion from Liverpool. Liverpool has got no semp-eternity as a port even if the trade of Great Britain went on and increased. Ships, of course, now making their voyages to Liverpool, for some reason or another might leave it. Our water consumers, if the trade of London goes on—which is, of course, the point in the analogy which is the same as the trade of the country which goes to Liverpool, cannot go elsewhere. They are not in the position of the ships that now go to Liverpool, and who, although they wanted to trade, might trade with some other port. Our water consumers must use London water; and as long as London remains what it is, which means to say as long as the trade of which I was talking in the Liverpool case remains to be done, the London water companies must be the port at which it must be done. There is not that danger. Therefore, London is as though—when we were talking of the ships in Liverpool, the ships that go to Liverpool had Liverpool for their one and only port. I say, therefore, as a matter of fact, if those Liverpool bonds are now bought at 3l., it is perfectly clear that you may take a lower price for the bonds of the London water companies. But as to the price of shares being somewhat below this level, I have not the slightest anxiety about that. I say yes, they are, because certain eventualities as to future expenditure, &c., are supposed to be in front of the water companies. Very well, but I also say that precisely the same eventualities would beset a purchaser, and that also the amount in reference to such eventualities which the arbitrator would take off for the income for the purposes of assessment of the purchase money ought to be considered to match the risk assumed by the purchaser himself; or else there has been a faulty award. Consequently the purchaser in that respect ought to be no gainer, and I certainly say, by parity of reasoning, no loser. Now, further, I say, and I put it in another way in order to emphasise the position, because I think it is so essential—I say on the other hand that when that amount which represents eventualities has once been taken off the vendors' income, that income is, so to speak, skinned, flayed of its risk, and ought to be valued at exactly the same rate of interest as the most assured income ought to fetch; and I do not care what the assured income is. But I will put it in this way. It ought to be assessed at the rate of interest of a perfectly safe borrower's loan, to wit, such a borrower as the London County Council. And that being done, I ask once more, where is the room for profit? Now, of course, I know perfectly well, my Lord, to go to the accounts for a moment of some of these municipalities, that as a matter of account, profit or loss may be very easily shown as desired; but not profit to the community at large—to the community as a whole. For instance, I know that by reducing all rates to the lowest level, a loss could be factitiously created, which would have to be made good out of the rates. I know that perfectly well. On the probability of that I might cite Sir Alexander Binnie, only I prefer to cite him upon that point a little later on. But I say I know a line may be easily shown which would be giving, of course, a great profit to the consumers of water at the expense of the non-consuming ratepayers. That would be a profit to one class of the community but not profit to the community at large. But even then, although I do not think it is necessary for me to insist upon it, the amount saved in water rents might be of less consequence to a good many of the consumers than the share which they would have to pay in the general rates in consequence. But, however, that I leave. Then I know, on the other hand, that by largely raising the water rents a profit may be shown, and then the injustice is done to the very opposite class, to the consumers themselves. But that profit or loss, as the case may be, would not be a profit or loss to the community at large, but only to the two classes of consumers and non-consumers *inter se*; there would be neither profit nor loss to the community at large.

Now, I think I have said enough, in dealing with what I venture to consider the fallacy which has been so constantly asserted to show that the purchase in

such a case as the present, and that is what we have got to deal with, means the making of the profit by the community at large, considered as a whole, in lieu of being made by a commercial company. Now, the only scintilla of advantage that I can conceive is one which again, if I may venture to attempt to read your Lordship's mind, so far, was in it when you put a question to me a little while ago, the only scintilla of advantage would be in the possibility, that after all said and done, the London County Council, in the future, might borrow at a somewhat lower rate, the merest shade of a percentage cheaper than the companies. I look upon the companies as having started on an era of raising their capital by loan, and I say, therefore, that the only possible scintilla of advantage left might be that you might suppose that the London County Council might borrow at a slightly lower rate than the companies. Now, the figures that I have quoted just now from that table put in at question 2568, and to which I was going to say, I entreat your earnest attention when you come to consider this matter, the figures that I quoted, at all events, show that the difference would be very slight indeed, if any at all, even if the whole of the London rates were pledged. Now, let us take Mr. Haward's own figures. You said you had them in mind, my Lord, but he said in answer to question 2674, "I put it at 2l. 12s." Now, I take the figures I have just given, namely, the 2-74, as being what I said they were, or 2l. 14s. 9d. Now, putting it shortly, that is one-eighth, or a little more than one-eighth per cent. cheaper than the water companies, apparently, up to that time have borrowed at. But I venture to say that the difference of one-eighth per cent. even disappears on investigation, and may I, although I have not the pleasure and satisfaction of seeing him here, make a slight reference to one of your honourable colleagues, who said, on a former occasion, that it had been proved to demonstration that there was a difference of one-half per cent. between the powers of borrowing of the London water companies and the powers of the London County Council. I am afraid that, a little too brusquely perhaps, I contradicted the Right Honourable gentleman. I had no right to do it, of course, and I am sorry I did it now, but as a matter of fact, I think you will see that my contradiction was well founded. I do not think that any such evidence has ever been given, but if it had certainly it would have been a gross mistake, and that is what I ought to have said, that if the evidence was given it would have been a gross mistake. I cannot find it anywhere; but still I am ready to suppose that I was wrong in that matter and that the Right Honourable gentleman was right. However, I say that that difference of something like one-eighth per cent., a little over that, may be fairly said to disappear on investigation. In the first place, I point this out, that if we were known to be finally left in peace, our credit, good as it is, would undoubtedly improve a little, and a very slight improvement would do the business.

On the other hand, the credit of London is not infinite, good as it is. Sir John Lubbock has told you, and on that point, at all events, he is surely a good authority, that this purchase would raise the rate at which London would be able to borrow easily enough at once by that same one-eighth per cent., which, as present, taking Mr. Haward's figures and mine, we seem to be agreed about. That is what Sir John Lubbock says, and Sir John adds, that not only would the rate per cent. be enhanced for this particular loan, but he says it would affect all the other loans to which London in many ways is pledged, and which I think he puts down at something like 10,000,000l., a reflection, mind, which gives a very wide aspect indeed a the financial consequences of this purchase. Indeed, Sir John Lubbock's figures seem to me to be full of force. At question 6008 and following questions, pretty close to what I have been dealing with before, he gives you the present indebtedness of London. I will not ask you to take his exact words, my object is to give you the reference; but he says the indebtedness of London is 39,000,000l., of which you may take off 19,000,000l. as representing the sinking fund, say, 20,000,000l. net. He supposes that 40,000,000l. is to be paid for the water companies, whether it be somewhat more or somewhat less, we need not stop to consider. He supposes 40,000,000l. to be paid for the water companies; he supposes 30,000,000l. to be sunk in Wales; he supposes 10,000,000l. to be wanted for miscellaneous loans; in other words, 80,000,000l. in all. He is probably far below the cost of the Welsh escapade, but even so, the

total amount comes, as I say, to 80,000,000l., and all to come, say, in the next 20 years. Now, 80,000,000l. added to 20,000,000l., would be to quintuple the debt. Well may Sir John Lubbock think that to quintuple the debt of London would be to raise the rate at which London could borrow. I notice that Mr. Banbury, and of course, Mr. Banbury from his own point of view of a London stockbroker, is a pretty good judge, says that the rate would probably rise to 2l. 18s. 9d., and he argues it out very clearly. In case you should like to have his evidence, let me tell you that it follows upon question 13,826. Once more, as I have given you the figure, it is not worth my while to read the half page or so in which he argues out that point, but to whatever percentage the rate will rise, do not forget this, that you must add to that the amount of money to be paid annually for the sinking fund. If Sir John Lubbock were right, and one-eighth has to be added to Mr. Haward's 2l. 12s., it means 2l. 14s. 6d., plus a sinking fund. If Mr. Banbury be right, it means 2l. 18s. 9d., plus a sinking fund; but in either case, and I content myself with Sir John Lubbock's estimate, the rising of an eighth to 2l. 14s. 6d., plus a sinking fund, means something considerably above the rate at which we can borrow at this moment at our 2l. 14s. 9d. So that that small margin, that scintilla, of a chance of profit absolutely disappears and more than disappears. Leave the water companies alone. They will borrow at 2l. 14s. 9d., or something less, if they are left in peace. Sell to the London County Council, and they will borrow at probably 2l. 14s. 6d., if Sir John Lubbock and Mr. Haward both be right, plus a sinking fund, which, I suppose, would bring them to something over 3 per cent.

Now that seems to me to get rid of the very last rag of a chance of profit by this proposal. Sir John Lubbock went so far as to say that if the companies were bought at Stock Exchange value the London County Council would begin with a deficit of 40,000l. a year. It seemed to me at the time that the deficit was very much larger, but never mind that. I think it was Mr. Banbury, or was it Colonel Lockwood, upon my word I forget which of the two at the moment, but one of them said that in his judgment the Stock Exchange value rather understated than overstated the real value of the companies, because he said investors do not altogether realise the import of prospective values. Be that as it may, I am not concerned to discuss that particularly, because I am quite ready to admit, and it is part of my case for myself as much as of the other side, I am quite ready to admit that the deficit would probably disappear with the growth of income, if, and here comes the big if, if there were no militating causes against its disappearance when once in the hands of the London County Council.

But, my Lord, in my poor judgment there will be many, and most important drawbacks to the value of these properties if once they pass into the hands of the London County Council. These, I propose, with your kind permission, to consider, because to my mind they are absolutely conclusive upon the point, the financial disadvantages of this purchase to London. In urging what the treatment and conditions of the property will be when it passes into the hands of the London County Council; of course, my Lord, you can only be guided, as I was guided, by what their witnesses have laid down as the conditions of their investment, and the conditions of the moment when they have made the investment. We must accept that because we have got nothing else whatever to go by, particularly when we remember that last report of the London County Council, made after your own appointment, which contains the paragraph which I will read a little later on to the effect that the London County Council intends its witnesses to be exponents of its main position. It therefore seems to me to be at once fatuous and improper to suggest that after purchase the London County Council might reverse every intention it makes public through their witnesses, and every course of action to which these witnesses have spoken as inevitable, and which in your presence they have declared not only to be probable, but absolutely incumbent upon the London County Council, or anybody else that owns the water companies.

Now to consider these drawbacks, if your Lordship will allow me, one by one. In the first place there is the strong probability of extravagant management. On this, Sir John Lubbock under question 5727, and again at question 5755, is particularly strong. You will find he has got a great deal to say in a long paragraph, where he made a most careful and elaborate answer

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justifying his position, and again he says the same thing, and amplifies it in answer to several questions which begin with question 5755. He there in those two places analysed Mr. Haward's various heads of saving, and as far as I can gather from what he says, he leaves none existing, except one saving upon law. But mind that saving upon law does not depend upon purchase. It has been caused both to the ratepayers of London, and the shareholders of the water companies alike by the action of the London County Council, of whom I do not think it too much to say, that for the last half dozen years they have absolutely refused to let the companies alone. It is not purchase, it is peace which would put an end to that expenditure, the settlement of the question. To suggest as one or two of the London County Council witnesses have done that peace can only come by purchase, because they will never make peace upon any other terms is not an argument. It is a childish threat. If you do not give me what I want I will go on screaming till you do, is a fairly well known nursery phrase I think.

Now surely such a suggestion as that cannot be translated as the London County Council witnesses have tried to translate it, into a grave financial argument that that would be a saving to London. Are people to be heard to plead first of all the costliness of a state of things which their perversity has inaugurated if they are in the wrong, and which they boast—because that is what they have done here—that their persistency and obstinacy will maintain—are they to be heard to put forward those two things first, and then to turn round and plead what an economy there would be in giving way to them. Surely not. But in everything, except this one item of parliamentary litigation, the chances are against the cheaper management. To take even the case of directors' fees which looks the most difficult to deal with, you must have some skilled body of men to direct these vast undertakings. You do not want mere persons to show well in the witness box, who are used to giving evidence, and who, therefore, can deploy their abilities in the best possible way; you want the far less showy people who, perhaps, cannot do very well in the witness box, who are not accustomed to go there, but who know the needs of the situation and how these companies have been managed, and who have been used to managing these undertakings for the last 10, 20, 30, or 40 years as the case may be. It is just such a permanent body as that which is wanted.

Now, in speaking on this point, I just want to emphasise the fact of the enormous size of these undertakings. I do not really think that people stop to consider it. Taken severally—and I have done that pretty carefully—each one of them is on a par or more than on a par with the largest undertakings of the kind in the country. At question 3538 Mr. Gomme put in a table useful for other matters, but particularly useful for this—it is one of a very long series of tables, but I take the last one. There you have got a long list of towns in England with a number of extremely useful facts, which, for this purpose, I take as true—you have the population supplied and a lot of other matters. At this moment I am dealing with the population supplied. I have taken carefully the eight largest of them. They are Birmingham, Bradford, Leeds, Liverpool, Manchester, Sheffield, Nottingham, and Bolton. Those eight largest towns have got varying populations—varying in the case of the largest, which is Manchester, from 849,000, down to Bolton, which is the smallest of the eight, to 250,000. Perhaps I do not make the position sufficiently clear. It is the population supplied in each case.

(Mr. Pope.) Or, rather, within their area of supply—not necessarily supplied.

(Mr. Pember.) It is here called population supplied within municipal limits and without municipal limits. Whether it is what is actually supplied with water, or whether it is what they may be called upon to supply, I do not know that for our argument it is essential to distinguish. However, the population, whether it is within their area of supply or the population actually supplied does not matter. It is 4,113,274. Now, dividing that by the 8, you get an average for each one of those areas of supply of a population of 511,659. We may dismiss the odd figures. The nearest figure I can take for London, I think fairly, at the present moment in a similar way, would be 5,600,000. I divide that by the eight water companies, and I find that that works out as the average for each company with a population of

700,600 people. Of course, some are smaller and some are larger, but that is estimating them by population. The average population of a London water company is 700,000, while the average population of the eight greatest municipality supplies is 500,000. That is, estimating them by population. Then, estimating them by supply—by the size of their undertakings—collectively at the present moment, the supplies of these eight companies are over 200 million gallons a day. That is a supply as large as the possible supply of Vynwry, the possible supply of Thirlmere, the possible supply of Loch Katrine, the possible supply of the Birmingham Scheme, all taken together. That shows you the magnitude of each of the eight undertakings that this London County Council, a fluctuating body, and the all rest of it, is so glibly saying that they will undertake to manage without its costing a shilling for directors' fees, or anything of that kind. In a very few years it is obvious that they will be very much larger, because what I have given you is the total figures in the other four great cases. In a few years they will be very much larger. If London goes on increasing up to the point of wanting 300 million gallons from the Thames, that will bring the supply up to the 400 or 420 million gallons of the Balfour Commission. Now that shows the magnitude of the various undertakings that they so glibly say they are going to manage, just as if it were some small department of their own. At the same time recollect this, that all these supplies were obtained from sources of supply before—some are from wells, some from the Lea, some from wells in Hertfordshire, some from wells in Kent, and those that are on the Thames come from different points of the Thames. They are all separate contributions. Mind you, nearly all the companies have their differentiating characteristics. Moreover, there is one peculiarity, which is common to all of them, except the Kent, and to a certain extent, of course, the New River Company and the East London Company (that is the well supplies), and that is the extremely delicate and watchful manipulation of the water which is necessary to keep up the supply to its present undoubtedly high standard; and, moreover, the maintenance of it depends not entirely upon manipulation, but—and I am quite ready to admit it—on control. You have heard, and I have not the slightest doubt you remember, two or three of the London County Council witnesses say, that if once the thing passes into the hands of the London County Council, they not only think that control is unnecessary, but they would deprecate it. In this connexion the old phrase *quis custodiet ipsos custodes* is a very important one. Now I say it is impossible to conceive or believe that so enormous and difficult a business or series of businesses can be satisfactorily and successfully conducted by a mere committee of a fluctuating body like the London County Council. They are a body already overwhelmed with business, and overwhelmed to an extent of which they are even cognisant themselves. I notice that they must be more or less aware of this, because I see that in the Report of the Parliamentary Committee, dated the 15th October 1895, they say this: "Taking this proposal as a basis"—I need not read what goes before—"we would suggest "a body composed of members nominated by the "London County Council, the City Corporation, and "the home counties, with the addition of nominees of "the Local Government Board, and of a sufficient "number of co-opted members possessing special "knowledge and qualifications." So that you have got, even by their own confession, the necessity first of all, of a certain number of members nominated by the Local Government Board; and, secondly, of a certain number of co-opted members with special knowledge and qualifications. The date of that is the 15th of October 1895.

(Chairman.) Where is that?

(Mr. Pember.) The report was handed in at question 4811.

(Chairman.) That is a quotation only?

(Mr. Pember.) No.

(Chairman.) That is a quotation from Sir William Harcourt.

(Mr. Pember.) No; it is not, if you look at the paragraph. I thought that it was at first, but it says "as, however, the Council will doubtless look to us for "some expression of opinion on the subject, having "regard to the desire expressed by the Council that it "should be the water authority for London, we may

"quote the words of the Report of the Select Committee, presided over by Sir William Harcourt." And then the words of Sir William Harcourt fairly represent their views. Sir William Harcourt's quotation stops at the word "Board," and then they go on, "Taking this proposal".—

(*Chairman.*) Yes, I beg your pardon, that is quite enough.

(*Mr. Pember.*) I am only anxious we should make it clear.

(*Mr. H. L. Cripps.*) That report was not adopted by the London County Council.

(*Mr. Pember.*) I do not care two straws whether it is adopted or not. It is a very sensible remark of some of the more sensible perhaps of your members, although I do not want to be uncomplimentary. The date of the report is the 5th December, I see. The report of the 5th December begins with quoting that report which was dated 15th October, but the words that I was reading come in the report of the 15th October although they are adopted in the one of the 5th December. But there is no magic in December or November for the matter of that. However I do not want to seem to be unfair, so let me call your attention to question 5363, where Mr. Dickinson is examined, and your colleague, Mr. Cripps, asks him a question. Mr. Cripps says "That is not Sir Matthew White Ridley's idea at all. He has this important element in it—and also some other members who may be particularly acquainted with the subject." I ought also to add that Sir Matthew White Ridley's Committee recommended the same thing which is in my memory as much as in the memory of your honourable colleague: "you know what his recommendation was," says Mr. Cripps, and the answer is, "I know very well that is their recommendation, and it is a point which the City attach great importance to, and we assented to the City nominating anybody they liked for that reason. The Council take rather the opposite view. They think that only representatives of the people ought to be on it, and therefore we do not propose to put anybody on." I thought it only fair to read that. But on the other hand I set against that the declaration of their own Committee, made on the 15th October 1895, to exactly the contrary effect. Whether Mr. Dickinson was a member of that Parliamentary Committee, or not, in October 1895, I do not know, but I suggest therefore that the Parliamentary Committee of 1895, and Sir Matthew White Ridley's Committee, two or three years before, were right in that matter, and that if you are to have purchase you must have a seasoning, so to speak, upon the Board, and a tolerably expensive seasoning too, namely a sufficient number of co-opted members possessing special knowledge and qualifications.

I say that such gentlemen would have to be paid, and they would have to be highly paid. As to the reduction in the number of engineers or secretaries. Mr. Haward once more admitted that they would have greater responsibilities, inasmuch as the London County Council are an inexperienced and fluctuating body, and they ought to be better paid. That he says at question 2741. There, again, I know that he said that he thought that the contrary change would in all probability be made in spite of the "ought" in the answer. The questions are: "On the contrary the directors of the water companies have an opportunity in the course of years of acquiring a very complete knowledge of their undertakings and of the works; is not that the case? (A.) That would be so. As far as my opinion is worth anything on the subject, I think that, on the whole, the engineer of the local authority would, perhaps, be in a more responsible position than the engineer of a public company." It is Major-General Scott who asks the question. Then the next question is: "Therefore, he ought to be better paid? (A.) He ought to be better paid, certainly, but I doubt whether he is as well paid." I quite admit what he meant by "is," whether he was looking to some presently existing gentleman or not, I do not know, but I know that his opinion is, that these engineers and secretaries ought to be better paid. While he says that, he qualifies what he says now. I cannot forget that Mr. Haward, although frank in his admission as to what the right of the matter is, was also in charge of his own theory of savings, and, therefore, was obliged to pull himself up, as it were, and remind himself that his theory of savings must be taken care of.

Now, as to his saving in printing, because it is quite curious the small ways in which he has to make up this 50,000*l.* he hopes to save. I quite agree with Sir John Lubbock that anybody who knows the appetite of a public body for documents, and anybody who has had the slightest chance, and I have had abundant chances, of seeing the piles and piles and piles of printing which the London County Council, are in the habit of indulging themselves with will hardly go with Mr. Haward, in thinking they will save much on the score of printing.

Then, as to saving in collection, I spare myself just a word upon that. Of course, if you are simply to pile the work of collecting these water rates upon the poor rate collectors, you may save something. But can you? The evidence as to what is done in other towns is not very complete, but certainly in some of the larger towns that I mentioned just now, in speaking of their population, the evidence is that they have to have a separate water collection, although in some not. In some towns it is not found practicable, and you have the expert evidence of one or two of our secretaries and engineers and chairmen, who told you that the collection of the water rates is not a very simple matter. It is not as simple as the collection of other rates to begin with, and more than that, a great deal of clerical work has to be done, some of which is antecedent, and some of which is subsequent to the mere process of collection. Now, that clerical work would have to be done, and would have to be paid for, and a change of method, therefore, probably only means this, that you would have to pay for clerks instead of having to pay for a staff of collectors, and probably you would have further to pay the collectors that do the extra work something more. People always want a little more pay when they do a little more work, especially in these days, as my friend, Mr. Littler, says.

Now, on the whole, having gone over the items I think that Mr. Haward's project of saving will, as the late Lord Tennyson said of a broken purpose, "Waste in air." There will not be much of it left. More, it seems to me questionable whether Corporation management will not follow the results of Corporation management in other places.

Now, let me turn to a table of Mr. Gomme's which I happen to have looked at, and which seems to me to be particularly instructive on this point. It is one of the same set of tables which I made the quotation from of the populations of the eight largest towns owning water undertakings in England. It is the second portion of Table 10 which was put in at question 3538, and it wants a good deal of fishing about in the table to do what I have done, and I must ask you, as I did before, to take me somewhat on faith in the matter. You will see that there are some 47 towns in all, I think it is. Of those, 28 towns show a surplus. The surpluses are mentioned. You see a surplus plus in column 5 or a deficit minus after payment of loan charges. I have been at the trouble, as anybody who happens to see my copy of the table might bear me out, of adding up the amounts of all the deficits and the amounts of all the surpluses; and I once more ask you to forgive me if there is any slight error in my arithmetic—I do not think it would be an important one, and I hope there is none.

(*Sir John Dorington.*) In all these towns or a certain number of them?

(*Mr. Pember.*) The whole lot.

(*Sir John Dorington.*) All on the table?

(*Mr. Pember.*) Yes, all on the table. I have taken all the surpluses and added them together, and I have taken all the deficits and added them up together. As my friend Mr. Littler again says, supplying me with a slight bit of humour which I ought to have found for myself, I have divided the sheep from the goats. I have not included those that are supplied by companies, I have only included those that are supplied by municipalities, because it would not have been part of my business to take the companies. The deficits amount to 237,298*l.*; the surpluses only amount to 151,898*l.* Now, to look at the deficits first. Of course, the total amount of deficits, as you see at a glance, is getting on very fast to 100,000*l.* greater than the amount of the surpluses. It is rather interesting to see how these deficits are treated. The headings are "Transferred to reserve fund of special water account. Transferred to reduction of prime account. Transferred to relief of borough fund. Held in balance of water account." Then "Out of borough rates. Out of balance of water account" and so on. Of

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these deficits of 237,000*l.* odd, 164,126*l.*, had to be met by a rate in aid. A very large proportion of that residue I am sorry to say I have lost my figure for it, but it does not matter—a very large proportion of the residue was paid out of the borough rate, and only an insignificant amount was provided for out of balances in hand. If you look at balances in hand you will see how small they are. I think it is about 77,000*l.*, that is paid out of borough funds; but, however, I should be sorry to be wrong, and I think I have made a slight mistake in that. However, only a very small amount indeed is payable out of balances in hand. Now, let me also call your attention to this, that when you turn to the surpluses you will find that there is only a small sum—a very small sum—devoted to reduction in price. If you take the trouble to look at the amount transferred to reduction in price there I think it is something so very very small that it is hardly worth talking about. I think I can only find one item, 1,846*l.*, transferred to reduction of price. That is the only one really.

(*Chairman.*) The great bulk of the surplus seems to go to the relief of the borough fund.

(*Mr. Pember.*) Certainly 61,000*l.* I added that up. The total surpluses, as you say, went, frankly, in reduction of the borough rate.

(*Sir John Dorington.*) Any deficiency in the borough fund is provided out of rates, is it not? So that going to relief of the borough fund is the same thing as going to lower the price.

(*Mr. Pember.*) Yes; but it does not relieve the consumer *quâ* consumer.

(*Sir John Dorington.*) No.

(*Mr. Pember.*) The reduction in price relieves the consumer.

(*Sir John Dorington.*) Yes.

(*Mr. Pember.*) I quoted that table, and I ask your attention to it somewhat in detail as to what I have quoted from it, because, I say, it gets rid of the presumption attempted to be made by the other side that municipal management is likely in itself to be cheaper and better than the management of a commercial company. Of course, one has the best reason for doubting that; but, anyway, there it is. You have got in those 47 towns 28 with a surplus: but a surplus so small that it only amounts to 150,000*l.* And you have got 237,000*l.* of deficit, which has to be made good in the way I say, and you have only got a paltry 1,846*l.*, which is used for the only proper purpose out of the surplus, namely, in the reduction of the price to the water consumer, who originally paid it. Now, that is not a table of my making, or of our making; it is a table made by the London County Council. I was going to say by their chief witness; but, at any rate, by one of them, and—as far as comprehensiveness goes—taking in all those towns that it does take in, I think we may consider that it is fairly exhaustive.

Although, as you see, I do not mind criticising them, I am not one of those who would care to be constantly railing at the London County Council. Not at all. It has been my duty, as advocate, to criticise them from time to time, and sometimes to cross-examine members of their body; but I am quite ready to vouch my poor opinion—I do not suppose they will value it much—that they have done a vast deal of excellent work in London. But, still, I think the fact remains that, in some very serious directions, and to some very serious extent, their management in business, in matters commercial, has not been a success. Just take one notable and notorious instance. I take that of their Works Committee. It matters very little whether what happened then—or, rather, I ought to say there—happened from want of business capacity, or from the prevalence of some perverse, uneconomic theories of some of their members about wages, and so forth—I do not really care—it is enough that it happened, and that something of the same sort may happen again; and it would be of the very gravest financial import if it happened in the management and administration of eight huge undertakings, costing some 40 millions of money, and in the expenditure of some 40 or 50 millions of money more.

(*Mr. H. L. Cripps.*) Where is there any evidence as to what happened? What are you referring to?

(*Mr. Pember.*) Nothing. It is only because I wish to exercise some reserve in dealing with this matter that I do not reiterate the evidence given by Sir John Lubbock, Mr. Whitmore, and others, as to the want of leisure, as to the want of business capacity, as to the

want of permanency, and lastly, as to the dangerous political and commercial proclivities of the London County Council. You heard it all as much as I did and I am very glad to be able to spare myself the necessity of reiterating it. It is all on record.

Now, I should like on the other hand to interpolate a word or two in defence of our own management. Let me remark first that Sir Arthur Arnold long after Messrs. Haward and Gomme had given their evidence, said that our management was excellent. He said that at question 7922. Once more, as I wish to avoid the merest shadow of a supposition that I do not quote fairly, I wish to call your attention to the fact that Sir Arthur Arnold when he said this, said at the same time, indeed, that his opportunities of personal observation had been small. That is Question 7922, but his answer shows that the dexterous and ingenious inferences of the two other gentlemen, Mr. Gomme and Mr. Haward, are so completely a modern discovery that nothing in the nature of them had even reached Sir Arthur Arnold's ears, or he would not have given that answer. But the charge against us formulated by one of the gentlemen I name—I am sorry to say I am always confusing one with the other, no doubt they are both just the same for my purpose—but the effect of the charge is that we either starve the concerns while they pay small dividends, or else that we are lavish when they pay large ones. The tables put in at questions 3461 and 3488, I own, my Lord, frankly, are unintelligible to me, but fortunately it is not necessary for me to understand them, because that put in at question 2621 is quite sufficient for the purpose I have in view. That was handed in by Mr. Haward. With that in my hand let me say first that of course it is perfectly clear that until the company pays its 10 per cent., and has added to its back dividends, its directors have got something to achieve. That is quite clear, even although the company may be fairly rich. Even after that it is equally clear that the directors have got something to maintain.

Now I have put it as you see on the low ground of self interest that their management is likely to be, and continue, careful, but I should not be doing justice to these boards of directors, I think, if I did not insist that far and away beyond all that they take an honourable pride in managing their undertakings as well as possible, however small may be the extra profit that they gain by so doing.

Just to take an instance which occurred to my mind when this topic was before you—to take the instance of the Civil Service of this country that is zealously performed even by officials whose chances of promotion are over. Now just look at that table I have just referred to and see what the cost of management is. I will take the first one that occurs to me, the Chelsea. In other ways we have obtained not from this table, but in other ways I know it, what the Chelsea dividends have been since 1879. I know that they were for two years 6½; for another year that they were 7; for next year 7½; and then they became 8, 8½, 8¾, and they have gradually gone up steadily till they have got up to 10 per cent. in the year 1890, which is as far as I have been able to carry it down. It was not necessary to carry them any further, because since then they have been paying their 10 per cent., and they have got their back dividends. Now let us see what their expenses of management were. Take Chelsea. It was 745*l.* in the year 1872. Let us, however, begin with the year 1879, which is the first year of their dividends that I have got. It was 836*l.*, when their dividends were 6½ per cent., 849*l.* when the dividends were 10 per cent., and they are paying back dividends; so practically they are paying very nearly double what they paid in 1879, and you will see, of course, such a variation between 1879 and the present time as is perfectly accounted for probably by those items of severe or unusual expenditure which the officers have, told you, one and all, occurred in different years.

Now let us take the next that I have got, and the next that I have got is the East London.

I have got their dividends from 1887 down to 1896. They are 7½, 7, 7½, 7½, 8, for three or four years, and then they have gone down to 7½ and 7. Now let us see how the East London Company fare. Their dividends are rather lower. They are in 1897, namely, 7 per cent., which is lower than they were in 1887, and they have gone up very high in the meantime, up to 8, and, as I say, they were up to 8 for some time. Now just see how that is, although their dividends are somewhat lower in 1897, there expenses are about 50*l.* a year more.

Now where is there anything like consecutiveness established, between them?

(*Chairman.*) That is expenses of management or is it maintenance?

(*Mr. Pember.*) Management, and it was management mind you, that was the great charge against us, and it is management on this table. Let us now take another, I will take my learned friend, Mr. Littler's Company. It has gone up so that it is now paying 4 per cent. in back dividends. In 1879, I see that the expenses were 834*l.* Now just see, to follow them down, what it is in 1896. Then they are 828*l.* with an enormous growth in earning power. Then try the Southwark and Vauxhall Company, or I do not care which I take—let us take the West Middlesex Company, because the West Middlesex Company is one of the richest companies. The West Middlesex in 1879, were paying, inclusive of back dividends, 12*½*3, and, of course, they have paid less and less down to 1886, when they paid 10, because the back dividends are included in the 10. Now let us see what they are. Their dividends were given in the table handed in at question 25,838, but I do not turn to that. In 1879, the expenses of the West Middlesex were 1,100*l.* for management; they are only 98*l.* now. Now I assure you, my Lord, I do not exaggerate if I say I could go through the whole of the eight companies, and those who are near me can see that I have got all their dividends set out here, and there is not the slightest pretence for urging what the gentleman who drew that table up urged, namely, that we are reckless of expenditure when we are rich, and we are starving in expenditure when we are poor. I have got no especial means of finding out, anybody could have found out what the dividends of these companies were, and could have seen whether or not there was such a co-ordinate consecutiveness in the growth of their expenses, and the growth of their dividends.

(*Sir John Dorington.*) Where did you say the tables were that you could not understand?

(*Mr. Pember.*) They were handed in at questions 3461 and 3488, and I am perfectly certain that, so stupid am I, that nobody could make me understand them. I have tried hard with two or three other people to do so, but I cannot understand them.

(*Mr. Littler.*) I cannot understand them.

(*Mr. Pember.*) I cannot, and what is more, I do not want to.

(*Chairman.*) But I do not quite see where the difficulty in misunderstanding them is. They may be wrong.

(*Mr. Pember.*) It is only my stupidity, my Lord, perhaps.

(*Chairman.*) Where is the difficulty of understanding them?

(*Mr. Pember.*) I cannot make them out. I have tried, and I leave them. If anybody can make them out, and make them out against me, then I must suffer. I cannot make them out myself—I cannot understand them. However, as I say, my Lord, it is not really necessary.

(*Sir John Dorington.*) The difference is that one table is the total expenditure of the companies, and the other is the rate of expenditure per million gallons supplied, is it not?

(*Mr. Pember.*) I am very much obliged to you for giving me an interpretation of it, but I feel very much, as I daresay you know Belshazzar felt on a famous occasion, that the interpretation was not of so much importance as the fact at issue; and I cannot help saying again, that I think that the charge, which is a very specific one, is absolutely disproved by the table put in at question 2621, and you cannot do more than disprove a thing. There is no co-ordinated consecutiveness between the rise of our dividends and the rise of our expenses. And that is what is said just now. Now, I confess it was pleasant to me, after hearing all this from the London County Council, to catch what Mr. Stoneham said at question 14,187, because Mr. Stoneham abundantly showed you, I hope, that he was a perfectly independent and sagacious official. He was asked a question by Mr. H. L. Cripps—he is asked whether there is any foundation for the charge which I have been meeting. “Do you think that would probably be the case, or not,” says Mr. Cripps. I think that is the West Middlesex Company's business, for that was the company that the honourable and learned gentleman called his attention to. (A.) “I think the West Middlesex Company's business is conducted upon fairly

“economical lines. I have not noticed anything which would lead me to suppose that there is anything otherwise. They pay their clerks handsomely, and from time to time they make them gratuities; but beyond that there is nothing unusual; there is every reason, so far as I can see, to suppose that the West Middlesex Company conduct their business upon fairly economical principles.” Then he repeats what he said about their clerks—“If they had increased their salaries instead of making a yearly gratuity, no notice or attention would have been called to it.” (Q.) I do not mean to suggest,” says his interlocutor, “anything in the way of conduct at all of any sort or kind, but only about the inducement?”—(A.) I did not suppose you did.” And then he goes on to amplify what he had said.

Now I will leave that, having contrasted the chance of their management with the chances of my companies.

(*Mr. De Bock Porter.*) May I ask a question, Mr. Pember? Do you propose to leave uncriticised the suggestions of transfer by way of equivalent annuity?

(*Mr. Pember.*) I really do not think I have got anything to do with them; I do propose to leave it.

(*Mr. De Bock Porter.*) You have left it unnoticed.

(*Mr. Pember.*) And on purpose. I do not think I have got anything to do with it. I am entitled, I say, to have cash, of course, and if I have cash the result would be as I have stated. As to fancy ways of paying, they may lighten the burden of the London County Council, or may not, but I do not propose to comment on that. I have nothing to do with it.

(*Chairman.*) The London County Council, on the contrary, said distinctly that they ought to have the option of paying cash, because that would be the easiest plan for them from their power of borrowing at a cheap rate. By that means they would make a probable saving upon any cost price that they would have to pay in cash.

(*Mr. Pember.*) Exactly. Then I say at once that my answer to that is (it may be called harsh criticism) that they have no right to make the choice. I am entitled to have my money in cash, and I will have it in cash.

(*Mr. De Bock Porter.*) Then you object to the proposed transfer by equivalent annuities.

(*Mr. Pember.*) Certainly. Now I am asked not to forget this, that another very rich company, of course, is the New River Company; and Mr. Stoneham says at question 14,205 “If I may express an opinion, I should say that the New River Company is as economically managed as any company in London. It is marvellous in going through the accounts to notice the control that is exercised over the expenditure.” Then the noble Chairman says: “We have been told that as a company improves in prosperity and pays larger dividends it becomes more lavish on maintenance and management; what do you say to that?” Then Mr. Stoneham says: “That is not the case of the New River Company, I should say.”

That is a continuation of the evidence I have already referred to. Then, my Lord, you say to him, “But is it the case in any company?”; because it seemed as if he was confining his answer to the New River Company; and he said, “I should say not in any company.” I should say there might be a tendency where a company is making large dividends to charge revenue more heavily than they otherwise would do, but in a company where the revenue is pinched, there is a tendency to charge capital if possible, whereas while when the dividends are large, there is a tendency to charge the revenue. Do I make myself intelligible? (Q.) Yes, perfectly; but what I want to know is whether you have redressed those erratic tendencies?—(A.) So far as it was possible.” That is, of course, another matter; but that lax management he distinctly repudiates for any company.

Now, my Lord, that is the first drawback; therefore, that I present to you as to what the property will be when in the hands of the London County Council—that is, that loss, rather than saving, would be the result of a change of management.

Then the next is one which is also serious and inevitable if you are to believe any of the evidence that you have had called before you, and that is the severance of works for the purpose of transfer to the outside districts. I pass by the question of the futile policy of such severance, the sacrifice of unity by the re-creation of a number of new water authorities inside

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water London, I stick to my text which is finance. You will not ask me to lead you once more, I am perfectly sure, through these mazes of mains, and the net work of reservoirs, and the undue intimacy of the filter beds, and those perplexities of levels, and of exits and entrances into and out of the county of London, and re-entries and re-exits, and lastly into the question of the unmanageable size of the intakes for purposes of division, and of reservoirs, and of supply mains themselves. It was all explained to you very lucidly by Mr. Middleton, and by Mr. Hunter, and allow me to say most clearly and most temperately by Mr. Hervey, the engineer of the West Middlesex Company, and I ought also to say with perfect frankness by Sir Alexander Binnie himself. Of course, as all these engineers said, one after another, it could be done—nobody denies that, but it would be very difficult both in adjustment, and in actual engineering contrivance; and it would make a large amount of antecedent expenditure, waste money, and involve a very large fresh expenditure in new works.

Now, no assured estimate of the money to be spent has been made. I think, if I remember rightly, Sir Alexander Binnie told me he had made none, but Mr. Middleton put it at something like one million of money, and that is without counting the antecedent expenditure which I tell you would be waste. You will find that at question 17,252. I always like to give you the reference, because one never knows what may go on amongst yourselves after we have finished.

(Chairman.) I remember that very well, but it was hardly an estimate.

(Mr. Pember.) No. I think I said it could be no assured estimate of the money spent.

(Chairman.) No, it was a mere guess.

(Mr. Pember.) But Mr. Middleton put it at something like one million.

(Chairman.) Yes.

(Mr. Pember.) Now, my Lord, the evidence on that point is what I have said, and what your Lordship perfectly well remembers. Further remember, there is this very important point—that severance would cut off, it is hardly too much to say, I think, the sources of fresh business, of increased business in London. It would not take into account the income, in short, which the companies would keep, if they continued in operation, and which the London County Council would have paid for by anticipation, and which having paid for they deliberately fling away. But to put all this no higher than the one million spoken of by Mr. Middleton, it is a loss of 30,000*l.* a year at 3 per cent., which London must pay. The counties will not. I put aside the idea of ordinary supply in bulk; that would involve, of course, expenditure in mains and service reservoirs, and what not, but no one seems to regard ordinary supply in bulk, such as obtains in other towns, as practicable. Its want of elasticity seems to me to be fatal to it. The agreement with Surrey, I think, showed that, where they were to allow only, I think, 20 per cent. more than their present supply, whatever came of the future population of Surrey; and it is quite clear that in the event of the growth of these very large country districts, London could not be forced to go elsewhere for fresh supplies for their benefit. I say, therefore, that that is the second financial drawback which I present—the loss in that severance, which I take at a million of money.

Now, for the third financial drawback, which is larger than all these, and that is the equalisation of rates, to which the London County Council are not only pledged, but, further than that, to which I say they would be compelled.

Now, by equalisation of rates they mean, and I mean, the reduction of rates to the lowest level. At present the rates do vary, and they vary considerably. It has been shown, I think, that the incidence of the burden is not always commensurate with the difference of rate, with the variation of the rate, but I am not at all careful to insist upon that. As things stand, I submit that the variation of rate, or variety of rate, is no real hardship. It is probably even now unpopular amongst those whom it affects, but it is nothing in the shape of an injustice. It is not easy to see exactly how it accrues, so great has been the lapse of time since, but probably there were good reasons for it. I notice that it was thoroughly well considered in 1851 and 1852. The Bill of 1852 was originally drafted by the Government of 1851, Lord John Russell's Government,

and it clearly contained a clause for uniformity. That is obvious; but the speech of Lord John Manners in the House distinctly warned the House, that he did not intend, in having the Bill read a second time, to back the provisions of the Bill, and he particularly said that on that matter of rates he disagreed with the last Government—on the question of the uniformity of rates—and the moment that the Bill of 1852 came up for consideration before the Committee of 1852, the late Mr. Justice Mellor gave up this uniformity of rate, and said they did not intend to insist upon it. Now, I have the right to suppose, that this being deliberately objected to by the second Government, Lord Derby's, and being deliberately given up by Mr. Mellor, who was acting, as it were, for the promoters of the Bill, it is clear that the thing had been well considered, and there was some good reason why, at that time, it should not be insisted upon. But it seems to me that to-day the main consideration is this: the various populations that are affected by this variety of rates that have grown up under it, for all the world like different communities, in spite of being in geographical contiguity—the system has subsisted now for more than two generations—the best part of three generations. Take Lambeth, for example. During that period—Lambeth of course having higher rates, that is why, I take it—during that period of some 47 years or 48 years, which, as I say is getting fast on for three generations, I should suppose that nearly the whole physical form of Lambeth—the buildings above ground and all the rest of it—has changed, and certainly I should think the soil of Lambeth in the greater part of it has changed hands many times, either by way of lease or by way of purchase. Who buys, I should like to know, or who rents, a building plot or a house, without first inquiring what the rates are? They are taken into consideration either in the rent of the plot, or of the house, or in the purchase money for one or the other. But if once the supply is passed into the hands of the municipality there would be a very different state of things. People, I say, in Lambeth, again—but of course, if the thing passed into the hands of the municipality, it is tantamount to saying that the undertakings become one and indivisible, and then, I say, a perfectly new state of things would arise—people in Lambeth, I say again, would imperiously demand the reduction of their rates. They would say—and I do not see the answer to it—we are joint owners of these works; we have bought a common share in the common price paid for them, and to make us pay higher water rates is to make us contribute more to the cost, not only than our neighbours, but than our partners in the concern. We insist on having the water at a common price. And so in their several degrees would everybody else say, all the consumers of London would say that, whose rates were anything above the present West Middlesex limit.

The question is, therefore, what is this common price to be? Is it to be the highest; is it to be the lowest, or is it to be some middle one? It must be the lowest. All the London County Council witnesses, some with more caution and reluctance than others, admitted it. Mr. H. L. Cripps first of all puts the injustice of the inequality of rates as one of his famous special circumstances in London, and at question 146 he actually gives that. Let us see what he does say there. It is as to diversity of rates: "For instance, you have got 'a man occupying a house in one given area charged 'a certain figure for water, and you have got a man 'on the opposite side of the street who, because he is 'within the limits of another company, is charged so 'much less for water. All the conditions of the 'people are the same, and it is a most unsatisfactory 'thing that there should be these great variations in 'the charge,' and so on. Now it would be a very poor sort of remedy for that inequality which raised all to the Lambeth level for instance. 'Thank you for nothing' Lambeth would say, and everybody else, of course, in the whole of London would cry aloud, nor would it be a very much better one that you disappointed Lambeth by taking it down, say, halfway, and only halfway, and similarly coloured London with various intensities of discontent by raising the others up to that level. But Mr. H. L. Cripps obviously looks forward to bringing the rates down to the lowest level. I have got a note of what he said at question 497. He said: "We who think that purchase will result in 'economy think that that may be ultimately effected'—economy, if you please—"by a reduction of the water 'rates all over London to the lowest level. If a 'purchase takes place, and there is any disappointment 'as to the economy resulting, then it may be that

"that reduction of water rate may have to be postponed, but ultimately I think there can be no doubt that there will be a reduction in the water rate, or may be a reduction." Then, having told you that he says that the reduction is to be a reduction of water rates all over London to the lowest level. Now, Sir Alexander Binnie is still more explicit. If you do not mind turning to question 1693, and seeing what he says on the point. There he is asked: "I think that one of the effects of the whole thing being placed under one public body, especially if it is a representative public body, will be to equalise the rates, and I rather think from what I have seen of municipal rating that equalisation generally means levelling down rather than levelling up," but again, at question 1899, he is asked: "You have already told me that there is to be no reduction of price, and no change of quality for 15 years?" (A.) I beg your pardon, one of the effects of purchase is, as I say, that it would be very probable we should have to reduce our rates to the lowest that are now charged"; and then he goes on to say that is the general effect of municipal equalisation. Again, at question 5209, he is asked: "Then you are of opinion"—I think Mr. De Bock Porter asks that of Mr. Dickinson—"that if the undertakings are purchased by the County Council the existing rates would be maintained, or would they not all have to be adjusted to the lowest rates chargeable?" Then he says: "I do not think it would be quite such a simple matter as adjusting to the lowest rate chargeable. It is very probable that that is what it would have to come to,"—and I say they would have been imperiously told they must come to it—"but we should have to readjust the system of rating in the same way as they have done in other towns"; and then he goes on to say: "I should not like to say—I want to deal fairly with it—that we should be bound to reduce the rates to the lowest at the present moment." Then he goes on to say that the thing would be achieved in the course of the next few years.

Now, that is obvious, unless, as I suggested, before you are going to tinge London with varying shadows or shades of discontent, and well-founded discontent. Can I refer your Lordship to the question you want?

(Chairman.) I have got the contrary reference; Sir Alexander Binnie told me so. It seemed that the rates at first would have to be raised.

(Mr. Pember.) I refer to a passage just before a bit of evidence I have already given you. You said to him, in examining him, I understood you to say the rates would be raised for the next 15 years. You say so yourself, and then he says, No, that is not so. That is at question 1899.

(Mr. Pope.) Question 1621 is the question which your Lordship refers to.

(Chairman.) He is asked at question 1621: "Do you think the consumer would get cheaper water?" Mr. Mellor asks that, and the answer is: "About the same; I do not think that it would be dearer, in the long run. There would, of necessity, be a short period during which these large extensions, whether carried out by the companies or carried out by the public bodies, are being constituted, when probably there would be a slight increase in the rate; but I think that ultimately it would lead to a small reduction."

(Mr. Pember.) Quite so; then I say, at question 1899—it is the worst of these London County Council witnesses that they jump about so in their assertions—if you look at question 1899, which I have given you, and which is, of course, a week after that, he says: "You have already told me"—I suppose you were asking the question then, my Lord—"you have already told me that there is to be no reduction of price, and no change of quantity for 15 years. (A.)—I beg your pardon; one of the effects of purchase is, as I say, that it would be very probable we should have to reduce our rates to the lowest that are now charged."

(Mr. Pope.) He does not answer the question that that may be so ultimately.

(Mr. Pember.) No, but still that is what he says; then, again, at question 5210, he says, "that it will have to be done;" that is in answer to Mr. De Bock Porter; now I say that is what they will have to come to, and I say they will have to come to it, not only because they think it is right, but for two other very good reasons; because, first of all, they have

promised it, and one of the largest—I do not say this is in evidence, in case Mr. H. L. Cripps should be at me again, but everybody who knows anything about the *modus operandi* by which the agitation for the change has been brought about in London knows perfectly well they have been promising people cheap water all over the town—they have been promising to do this, and next, you may depend upon it, the ratepayers will force them to fulfil their promise.

(Mr. H. W. Cripps.) I do not think we have had any evidence of that, Mr. Pember.

(Mr. Pember.) I said so, sir.

(Mr. H. W. Cripps.) I beg your pardon, if you said so, but it struck me you were going to point out something for it in the evidence when we really had no evidence for it at all.

(Mr. Pember.) We have had plenty of evidence in the direction which I indicate.

(Mr. H. W. Cripps.) You were contending, and I can quite understand you, that this question of the equalisation or alteration of the rates is a strong reason against putting the water undertakings in the hand of anyone else.

(Mr. Pember.) Yes, most certainly, and in proof of that I give you the evidence of their own witnesses. Not only of their intention to do it, but that they will be compelled to do it, and I further give you my poor opinion of what they will be compelled to do when all their partners in the concern say: We are not going to be treated as on a different footing one from the other. Recollect, my Lord, what I am dealing with is finance, and I say this against the financial element. It is a very very serious blot in the financial element of this proposal. Now, the cost of this levelling down we know perfectly well on the best authority, namely, on that of those who are going to do it. Mr. Haward and Mr. Gomme have between them made it out to be 250,000*l.* a year. Not only that, but Mr. Haward had originally given it as 161,000*l.* a year, but on page

(Chairman.) That is for London only?

(Mr. Pember.) Yes.

(Chairman.) It is 161,000*l.* for London only, while for the whole of the water area it is 250,000*l.*

(Mr. Pember.) I am not quite sure, my Lord, that that is even the distinction. I think there was some confusion.

(Chairman.) Question 4438 and those following is my reference; there you will find the figures for the cost of lowering the charges to the West Middlesex Statutory Scale; for London it is only 161,155*l.*, and for the whole of the water area it is 250,000*l.*

(Mr. Pember.) I should be very sorry to seem to be at issue with your Lordship on that point.

(Chairman.) I am only trying to get at the fact.

(Mr. Pember.) I will look a little more carefully at that, but I thought that as a matter of fact the 161,000*l.* really only referred to some of the companies, and Mr. Gomme and Mr. Haward between them I thought supported that. Yes, it is perfectly true that what you say is said there. There is no doubt about that. Question 4449 is: "Can you tell us what the actual loss of income would be if the companies were bought up, and the present West Middlesex charges were the only ones in force through either the administrative county of London or the City area?"—(A.) That is a calculation I should have to make; I could not let you have it off-hand. (Q.) As you are aware, the sum is generally taken in round figures at a quarter of a million a year?—(A.) That is for the whole area. (Q.) Have you any reason to suppose but what that is approximately correct?—(A.) I think that is approximately correct."

(Mr. Pope.) That is for the whole water area including inside.

(Mr. H. L. Cripps.) I think I was responsible for that figure to begin with. I think I gave the figure as Mr. Pember suggested, as a rough figure, of 250,000*l.* a year originally; but I think the figures to which the noble chairman has referred, were given by Mr. Gomme after a much closer calculation; and probably those are the best figures to go upon.

(Mr. Pember.) But, also, there is another element which comes in, my Lord. Question and Answer 4448, are in these words: "Then do I understand that the

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Mr. Pember. "reduction of 161,155l. does not apply to the actual charge now made by the West Middlesex Company, but to their statutory charge?—(A.) That is so," says the witness. And then he is asked: "Can you tell us what the actual loss of income would be if the companies were bought up, and the present West Middlesex charges were the only ones in force?" And it is then that he says 250,000l. I do not know anything about Mr. Cripps being responsible for it but it is perfectly true that Mr. Balfour Browne says 161,000l. is for the administrative county, and the witness says it is for London only. But an interjection of that kind, I confess, I do not appreciate.

(Chairman.) That seems clear enough to take it so—that is what it would cost in the administrative county of London, 161,000l. odd per year to reduce to the West Middlesex level, and throughout the water area, it would cost 250,000l.

(Mr. Pember.) That is the West Middlesex statutory?

(Chairman.) Yes. That is how I have taken the evidence, in the result; but, however, if that is wrong, pray correct us. I do not know.

(Mr. Pember.) I should like not to do it now; but if I find that I am wrong, your Lordship, I daresay, will let me put in a small note to say so.

(Chairman.) Yes.

(Mr. Pember.) If I find that is not so, I will take care that the reference is given to your Lordship. I think, myself, it is bringing down the administrative county of London and the City, for the whole year, to the present charges of the West Middlesex, after making the reduction.

(Mr. Hollams.) Not the City.

(Mr. Pember.) Now that is how I leave it, and I daresay your Lordship will not ask me to alter my calculations, for I confess my calculations are made on that basis. In equalising the rates in London that would still be true if you have one body for the whole of Water London, but even if your Lordship's reading of the evidence—

(Chairman.) What do you take to be the figure of loss by lowering the charges.

(Mr. Pember.) 250,000l.

(Chairman.) For the administrative county or the whole area?

(Mr. Pember.) I take it for the administrative county.

(Chairman.) And the City.

(Mr. Pember.) And the City.

(Mr. H. W. Cripps.) I see when that is put to the witness his answer is, "No, only 161,000l."

(Mr. Pember.) I know. I quite agree that we are at issue on that point.

(Mr. H. W. Cripps.) I should have thought it was the same calculation made.

(Mr. Pember.) I will have it made as I have promised and if I am wrong I will apologise so far for having been wrong, but I certainly read the evidence in that way.

(Mr. H. W. Cripps.) It may be read in this way that you may be taking it for the larger figure than the outside area.

(Mr. Pember.) That is what the noble Lord in the chair suggested.

(Chairman.) If you look at question 4483—I do not say it is right—I ask: "What do you say is the right figure instead of 250,000l.?" (A.) In evidence I put it at 161,000l. (Chairman.) That is not for what Mr. Goldney is upon? (A.) Yes, my Lord, I think it is the same thing. (Mr. Prior Goldney.) No, it is not. (Chairman.) That 161,000l. is the difference between the charges of the other companies and the statutory charges of the West Middlesex. Mr. Goldney, as I understand, puts to you a quarter of a million as the difference between the charges of the other companies and the actual charges of the West Middlesex. Am I right. (Mr. Prior Goldney.) For the whole water area. (Mr. Balfour Browne.) 161,000l. is for the administrative county. (Witness.) It is for London only.

(Sir John Dorington.) By London only, he means the same thing as the administrative county.

(Chairman.) Yes.

(Mr. Pember.) I will have it looked up. It is a point of some difference, because it makes a difference in the capitalisation of something like 80,000l. a year.

(Chairman.) Yes.

(Mr. Pember.) But what I want to do, and what I am going to do at this moment is to show you what the result of all this is, and if your Lordship should come finally to the conclusion that I am wrong on that point as to the 250,000l., and that it ought to be 161,000l. I am perfectly certain that something ought to be added to the 161,000l., to meet the West Middlesex charges at present.

(Chairman.) That is quite clear.

(Mr. Pember.) You will be able to give effect to your opinion in making up your mind as to my figures.

Now so far as we have yet gone, we have got three serious drawbacks, each more serious than the one before it, and which we can appraise in money. First there is the probable disappearance of Mr. Haward's savings—there goes 50,000l. a year. Secondly, there is the cost of severance which I put at a million—there goes 30,000l. a year. Then there is the reduction of rates which is either something between 161,000l. and 200,000l. or else it is 250,000l. as I put it. I still stick to my own 250,000l. because I cannot do the figures again. If I am right as to the 250,000l., or if you consider it as applying to the whole of Water London it makes a loss of 330,000l. a year, and that represents the price at which they can borrow money, which is put at 3 per cent. And that represents 11,000,000l. of money flung away.

(Chairman.) What is your total?

(Mr. Pember.) 330,000l. a year. If they equalise the rates, and they lose that amount of money by them, if they do not save the 50,000l. which Mr. Haward talked about, and if they spent 1,000,000l. of money in works connected with severance, there is a loss of 330,000l. a year which represents 11,000,000l. of money. Then comes the fourth item which cannot be appraised, namely, the loss of future revenue by severance as I say, but which will be very large as time goes on, for I know that the outer districts are now proved to be one-third in London, and as Sir Alexander Binnie told you by his table which he put in at question 859, they are increasing at a very much larger rate than the population is increasing in London; but once more besides that—over and above all that—the London County Council have committed themselves to what is in effect a very large waste of money, or perhaps it would be more polite to say a very large sacrifice of money, if they take over these undertakings.

They are pledged absolutely to a Thames minimum flow of 250 million gallons over Teddington Weir. Now there can be no doubt whatever about that, Sir Alexander Binnie was precise about it. Question 1982 is: "I do not care why you are doing it; as a matter of fact are you doing it?—In the future that is a condition"—that is a minimum of 250 million gallons a day—"that ought to be put on anyone." Again at questions 1161 and 1188 he has said the same thing, but I cannot put it a bit stronger than he said it at question 1982—250 million gallons over Teddington Weir was what ought to be done, and was a condition that ought to be put on anybody. Again,—I will just call attention to this—in answer to Question 9493 "As I understand your evidence it amounts to this, that you think a purchaser"—that is the London County Council—ought at once to incur an expenditure of 7,300,000l. odd in order to have a Staines Reservoir "Scheme for the existing supply?" and he said, "It will be something like that." It is 7,336,000l.

Now if that only be taken to mean what we mean by the minimum flow that he has to leave the river alone when the flow would naturally fall down to that point, it means a sacrifice at once of 2,631,180l. If you will kindly look at his estimates B and C put in at question 9321, you will see the figures given by himself. For carrying out the works, that is up to the 185½ million gallons, you will see estimate B is on the basis of 200 million gallons flowing over Teddington Weir. The next is the same estimate for 185½ million gallons, with a minimum of 250 million gallons passing over Teddington Weir. The estimate in the one case is 4,705,185l., and the estimate in the other case is 7,336,375l. Deduct the one from the other and you get the balance that I have already given you of 2,631,180l. Now that is about what they mean to sacrifice. He said to you twice over in the most positive way, "that is what they mean to sacrifice"; it is a

condition that ought to be put upon anybody, he says, who makes these works; and you yourself, do you mean to say a purchaser ought to be compelled to do that? He says, yes, they cannot go back from it. It means the sacrifice of 2,631,180*l.* simply in carrying out the works for 185½ million gallons a day.

That is under the conditions of 1893. What the sacrifice would be under the conditions of 1898 I do not know, for though, at question 23,280, I think it was, he gave us an estimate "F" which was under the conditions of 200 million gallons for 1898, and brought it up to some higher point—I forget exactly what it was now, but it does not matter—he gave no estimate for 1898 of the estimate "C", which is the higher estimate for 250 million gallons; but the loss would probably be considerably aggravated. However, that is enough for me. I say, therefore, they are obliged, over and above all the 11 millions that I have mentioned, to the loss of 2,600,000*l.* more.

Now, lastly, and not least, for everything over 185½ million gallons they are absolutely committed to their Welsh folly—for everything over that they are committed to waste many millions of money unless the estimates upon our side which I shortly propose to analyse for you are hopelessly wrong. I might indeed go a great deal further and ask you whether you believe that their late volte face with respect to the 185½ million gallons is to be trusted. I know that Sir Alexander Binnie said that he made it with the greatest possible reluctance, and I had not forgotten his evidence of 1892, given before Lord Balfour's Commission, and I quoted that evidence at question 6491 on the 28th of March last. I referred to the questions and answers that he gave in 1892: "I presume I may infer that the position you take is that the River Thames and the River Lea should be entirely discarded as the sources of drinking water?—(A.) The open river, certainly. (Q.) That they should be entirely discarded?—(A.) That they should. (Q.) And that the whole amount of water therefore that has to be used in London should be derived from some other source?—(A.) From some other source."

(Chairman.) What is the reference?

(Mr. Pember.) You will find that at Question 6491; I had not forgotten that, and I read the quotation as soon as I could get hold of the evidence. Sir Alexander Binnie is of the same opinion still, because I see quite early in his evidence, he says "I object altogether," and I see Major-General Scott says "What part of it do you take exception to?" That is what part of clause 178 of Lord Balfour's Commission's Report. This is at question 1721, "What part of it do you take exception to?" Major-General Scott asks him. Answer: "That so large a proportion as something like 50 to 60 per cent. of the whole water supply of London should be derived from the Thames and Lea. I think you are running a great risk, considering the pollution to which those rivers are subject."

Now, my Lords, Sir Alexander Binnie is perfectly right in his figures, 185½ plus the 52½ from the Lea is equal to 238 million gallons a day, and he is quite right, that is more than 50 per cent. of the 447 million gallons, which he says will be wanted in 1931. He further says, that, owing to the increase of population, the Thames and the Lea will have to be abandoned. "Looking to the statistics of the past," he says in answer to Question 1727, "and to what has happened in the Thames Valley, I believe the time will come when the population will be so large that the companies will have to abandon that source." Surely that shows that the present conversion of the London County Council is very nearly as suspicious, even for the use of that 185½ million gallons a day, as it is late. Further, in a Report of the Council itself, or rather, I think, I ought to say, the Water Committee of the Council, dated February 1895, which was handed in at question 4929, in reference to various causes of pollution they say, after quoting the Royal Commission, which says they were strongly of opinion that the water supplied to the consumer in London is of a very high standard of excellence and purity. "Various causes of pollution" they say, "which are matters of ordinary observation and require no evidence to support them (for example, the drainage of 1½ millions of people) render the water of these rivers unfit for potable purposes." That is what they said in 1895, and you have the Report of 1896, which is quoted *in extenso*, a very few pages on which adheres to the Report of 1895, to which I am alluding, which discards the Staines Scheme altogether, and sets

out the Welsh Scheme for the supply of the whole amount of water *in extenso*.

Now, also, I should like to note an answer of Mr. Dickinson's to you my Lord, which I noted at the time, and which I thought was quite worth noting. You say to him at question 4973, "Let me stop there for a moment. May I take it that this is the last expression of the London County Council's policy that if the County Council purchase they would stop the Staines Reservoir Scheme and go to Wales at once for any additional supply," to which he says, "I am sure all past councils would have done so." But any way, whatever may be the truth about that, they are all plainly committed to the Welsh Scheme for everything over 185½ million gallons; and the enormous financial results of that are apparent, if our estimates for the Staines and Welsh Schemes are anything like approximately correct.

Now, after all that, how any sensible person can say that the purchase by the London County Council with all their views and avowed intentions can be financially advantageous to London passes my comprehension. To the 10 or 11 millions, whichever it is, that they would lose if they sacrificed among other things the whole of the sum represented by bringing the rates down to the lowest level, you must add, first of all, the 2,600,000*l.* of which I have spoken, which is attributable to the 250 million gallons a day minimum, and then the difference between the Thames and the Welsh Scheme; and if the loss on the rates was only a half of the 250,000*l.* that I put down here, and the consequent millions, instead of being a loss of 10 millions, it would be a loss of six millions, and to that you have to add the 2,600,000*l.* of which I have lately spoken.

Now, my Lord, if you do not mind giving me two minutes, I shall get to the end of this part of the matter, and then, I think, I should ask your Lordship, if it suits your convenience, to adjourn. I think it is not uninteresting, looking to all these arguments of mine, and the inferences that I have drawn from the evidence, to notice that there has been from time to time, up till quite lately, considerable hesitation, even in the London County Council itself, on this matter of purchase. Of course I know it is for you to make up your mind as to the financial advisability of the proposal, but still it is instructive to notice that so late as 1896 there was in the London County Council a strong view that, though they should proceed with the Bills for that purpose, they would not be committed to carrying them out. Mr. Dickinson gave that evidence where he says at the answer to question 5043, "The view had been taken of the compromise that it should not be obligatory on the Council to purchase, but it should be in their power to give notice to purchase." Then he says they were over-ruled by their legal advisers. That you will find again lower down upon the same page. "We drafted the Bill in this form in the first instance, but we have been advised," say they, in reporting to the Council by the parliamentary agent, "that this course is inconsistent with recent decisions of parliamentary committees in similar cases," and he says they sought other professional advice, whatever it might be, upon that point, which strongly supported their agent. That shows, as you see, that they did not want to be compelled to purchase, but so strong was this view, as I say, that they would have drawn the Bills in that shape of a permissive form; still the Bills were drawn in that obligatory form; and when they came to discuss it in the Council what happened was, that that form was only saved upon a division, as you will see at question 5046—by 53 to 51—"On the word 'shall' we had a division in the Council. It was proposed that the word 'may' be inserted for the word 'shall,' and the amendment was only defeated by 53 votes to 51." That you will find in the answer to question 5046. And that, mind, even with what they have called a substituted arbitration clause, with exceptional words about fair and reasonable value in it; and those other words to which your Lordship called attention the other day in respect of that last clause; and an express provision against the 10 per cent. for compulsory sale.

Now, to see what happened, look a little further on. In 1896 the Bills were only approved by a majority of 61 to 54.

(The Witness.) Then the motion approving the Bill was put to the Council, and they approved it by 61 to 54, and then he says in a kind of apologetic tone, as if one could not see through nonsense of that

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kind, "again a falling off in the numbers opposing." I put it to you that a minority of 54 to 61 upon such a point as this is a very powerful minority indeed.

(*Sir John Dorington.*) What is the number of the question?

(*Mr. Pember.*) It is under Question 5064. You will see the words—"(*The Witness.*) Then the motion "approving the Bill was put to the Council, and they "approved it by 61 to 54." Then he says, "Again, a falling off in the numbers opposing." So it was; it was 53 to 51 before; but, as I say, it leaves a very powerful and important minority against it, and shows a very profound hesitation in the body of the Council itself. For fairness, I ought to pursue the matter to the later debate in 1897. After the appointment of this Commission, the Water Committee reported again, as you will find at Question 5074; and that, by the way, is the report which contains the pretty phrase—"We are now, however, considering the evidence "which is to be presented by the witnesses on behalf "of the Council"—we, the Committee of the Council—"and we have come to the conclusion that there "are certain main principles upon which the Council "should express its opinion for the guidance of the "witnesses." Some of us who are used to the method of getting up evidence, would say that is rather a tall order. However, never mind; at all events, I take it in this way, that these witnesses on the various points about which we have all been talking, really do represent the London County Council. Indeed, I have not forgotten that Sir Arthur Arnold admitted that he did not draw his own proof. You asked him the question. Very well, there was a division on the reception of the report at all, and at Question 5074 you will find that 41 voted against receiving the report, and 57 for receiving it. That is on the reception, mind you—a most unusual thing; and I say, therefore, that shows a very strong minority in the Council who think, as I think, that of all the pieces of folly that has ever been proposed to be committed by a municipality, this is about the greatest. Recommendation A. you will find there, and it says—"That, in the opinion of the Council, the water "supply of the metropolis should not continue in the "hands of private companies." You cannot want a more elementary thing on principle than that. On that recommendation that the water supply of the metropolis should not continue in the hands of private companies they have a division; and what do you think the numbers were? The amendment negating that proposal was only lost by 54 to 35. Now that is the elementary proposal. You will find it in answer to Question 5080. The amendment was: "That since the "purchase of the undertakings the Metropolitan Water "Companies will probably increase the cost of water to "the public, the Council should not pronounce an "opinion in favour of such purchase, pending the "inquiry of the Royal Commission," and 37 voted for the amendment and 53 against.

(*Chairman.*) I think, if I remember right, those are all the old County Council in which the parties were evenly divided.

(*Mr. Pember.*) No.

(*Mr. H. L. Cripps.*) That was so, my Lord; the members who voted for the amendment did not all come back again.

(*Mr. Pember.*) All I can say is, that that last debate was in the year 1897.

(*Chairman.*) But after that took place the election, which was disastrous to the opposing party.

(*Mr. Pember.*) As to that, I do not care twopence about what the present view of the County Council is; all I can say is that members of that body, up to two years ago, have felt so keenly the danger of this transaction that you find that they, two years ago,—

(*Chairman.*) Mr. Dickinson himself at one moment thought, you know,—

(*Mr. Pember.*) Yes. I am not going to forget Mr. Dickinson; he is a gentleman that it always interests me to remember. Now, I say that all that shows a considerable apprehension on the part of a very serious minority of the London County Council, that the financial probabilities of purchase were such as should make the Council pause, and I agree with them. I think, if I might suggest it, we might adjourn now, my Lord.

(*Chairman.*) Yes, I might say that we hope, and indeed intend, to finish this week.

(*Mr. Pember.*) I shall make myself as short as I can, my Lord, but I hope you will not think that I am insistent in doing the thing thoroughly.

(*Chairman.*) Certainly not. We are all very much obliged, Mr. Pember, for the labour you have bestowed upon it. It might be convenient that rather than go into another week we should sit on Wednesday.

(*Mr. Pember.*) That would be a very good thing, my Lord, as far as I am concerned.

After a short adjournment.

(*Mr. Pember.*) I want at once, before we go any further, to apologise for a most curious folly which I committed about one hour ago, which, although it is not serious enough to interfere with the main result, which I am putting before you, is quite serious enough for me to want to put it straight at the very first moment. You will, of course, understand that if I had to make one I have had to make 50 or 100 calculations in connexion with this matter, and it so happens that the calculation of the loss that would accrue to the property in the hands of the London County Council, I made at a somewhat earlier period. It shows that you ought not to tinker with your work when once you have done it as well as you can. I subsequently made a calculation in which the 50,000*l.* of savings has properly to be deducted; and like a—well, never mind, I will not call myself any particular names—I went on and said: "Oh, I have forgotten this 50,000*l.*, in "dealing with the amount that they would sacrifice "if they came into the property." Of course I ought not to have dealt with that because it is merely the amount of the savings, which they say they intend to make. In that 330,000*l.* I added up the 50,000*l.* of savings. I said it was the 50,000*l.* plus the 30,000*l.*, plus the 250,000*l.*—just scratch out the 50,000*l.* I would rather confess my own sins than have them rubbed into me by a gentleman on the other side afterwards.

(*Chairman.*) Instead of the total loss being 333,000*l.*, you say it should be 50,000*l.* less.

(*Mr. Pember.*) Yes, my Lord. I cannot think how I came to do it, at least I would say I could not think how I could have come to do it, if I had not made a subsequent calculation, which I am going to put later, where it is perfectly right; and silly, you know, when I came to read over my notes, I said: "I have forgotten this 50,000*l.*"—when really and truly I had not forgotten to put it in, and I ought not to have done it at all. That is what happens to one if one ever tinkers work with which you have taken a great deal of pains to start with.

At Question 5098, and in those following, you will find an interesting examination of Mr. Dickinson by yourself, and I think others—but by yourself at all events—on the subject of the memorandum of 1891, which was to the effect that a purchase of 30 millions would add 30 per cent. to the water charges of London. We all saw that poor Mr. Dickinson had a certain objection to being pinned to this declaration, I daresay it is possible that Mr. Dickinson's objection was well founded, and that he is rash to have ever made the calculation; but still also it may not be accurate—I am inclined to think it is not far out myself—but, however, I have not made the calculation necessary to enable me pass a proper opinion on it, and I prefer, instead of looking to what he said, to analyse, the latest forecast which has been made on behalf of the London County Council. That is Mr. Haward's. It enables me to focus my views. If you will kindly turn to Question 2741, and of course the following questions, you will see what Mr. Haward says. Then as we go through this you will find how I came to make that foolish addition to my previous notes of 50,000*l.* a year. Now Mr. Haward conceives purchase as effected in the year 1901, and he estimates the gross profit then at 1,300,000*l.* a year. It is as amusing a thing, I may say in passing, as anything in this case possibly can be, after all that has been said as to the instability of our income, on the other side to find Mr. Haward building upon it in 1901, as if it was a very sound foundation; I agree with him that it is. He takes the gross profit at 1,300,000*l.*; he then says the present interest on loan capital is 239,270*l.*: he says the interest on capital to be borrowed in the interim will be 80,000*l.* a year, and therefore brings up the total interest on borrowed money to 320,000*l.* as I daresay you will recollect. He says the total net income therefore is 980,000*l.*, and to this he adds the estimate

of savings of 50,000*l.*—now it is quite proper to consider those—and therefore, says he, the total net income will be 1,030,000*l.* a year. He then sets to work to see what amount of capital expenditure in purchase that income would justify, he makes three alternative hypotheses, a period of 60 years, a period of 80 years, and a period of 100 years, for each sinking fund. He gives a calculation of the fixed charges for interest and sinking fund on each hypothesis. He says if the sinking fund is for 60 years the charges would be 33,353*l.* per million of capital; if the sinking fund were for 80 years, he then says that the charges would be, I think, 30,026*l.* per million of capital, and if it were to be for 100 years, 28,312*l.* per million of capital. He works out what capital expenditure could be made on the 80 year hypothesis for the sinking fund—or rather, my Lord, I think you do, and I think he accepts it.

(*Chairman.*) Yes,

(*Mr. Pember.*) That was so. I have done the other two—roughly, of course, and it seems to me that if the three were done, and he was making his calculations on a 60 years' basis, he could afford to give 30 millions, just.

(*Chairman.*) I make it 29·38 millions.

(*Mr. Pember.*) I thought it was just under 30 to say the truth; but when you are dealing with figures of this kind, an odd half a million does not make much difference.

(*Chairman.*) No.

(*Mr. Pember.*) I admit I was obliged to do it myself by a sort of rough and ready rule of three, and it may be there is some question of percentage—a percentage which I did not take into consideration, and which would reduce the figure. I am quite prepared to hear that is so.

(*Chairman.*) What income have you taken—1,030,000*l.*?

(*Mr. Pember.*) Yes.

(*Chairman.*) Then I quite agree with you; at 60 years that would be 30·88 millions.

(*Mr. Pember.*) As much as that.

(*Chairman.*) Yes, I think so.

(*Mr. Pember.*) Very well; I made it out 30 millions pretty well exactly.

(*Chairman.*) I have gone through all these figures once myself.

(*Mr. Pember.*) So I have; but there are sometimes nuances of calculations which you have to make which an actuary would tell you you had not taken into consideration, and which would make a difference. It is quite possible my Lord, you have taken them into consideration.

(*Chairman.*) Take it in your own way, Mr. Pember, I beg your pardon.

(*Mr. Pember.*) Not a bit, my Lord, I am only too glad. Say about 30 millions, or something over. If the 80 years' basis were taken I make it that it would be about 34·3 millions; and if the 100 years were taken I make it similarly 36·3.

Now allow me to say that I know no reason why the Standing Order as to the 60 years' sinking fund should be set aside for London; but the longer the period for which you set it aside manifestly the closer the burden to London approaches to perpetuity, and the less the present generation are doing for posterity, and, therefore the less does that consideration that we are bound to act for posterity and all the rest of it come into play.

I rather like always illustrating these abstract ideas, if I can do it by a practical application of them. Supposing a man of 60 years of age at this moment, which is one of those misfortunes which beset me, and that he has got a grandson, which happens to be my case, and therefore I suppose, I may take it, a year old, allow 30 years to a generation, that makes it that his great-great-grandson would be 10 years old at the expiration of 100 years, and the relationship between the two would be exactly the same as those between George the First and Queen Victoria. That illustrates the practical value at the present moment of this deferred benefit to London. However, this remains, that according to Mr. Haward, if he can make 50,000*l.* of economies with a 60 years' sinking fund he can give 30 millions, with 80 years he can give 34 millions, and with 100 years he can give 36 millions

—with a certain number of hundreds of thousands of pounds over in each case. Without those savings the income drops, of course, to 980,000*l.* My Lord, I am afraid your figures and mine differ slightly again. As you say, it is about 28 millions, that he might afford to give, in that case of 60 years; 32½ millions which he could give with 80 years and 34½ millions which he could give with 100 years. However, I am quite ready to say again that I only did it by a simple rule of three sum—as the one figure is to the other, so is the third, and it may be there is some nuance of calculation which ought to come in.

I have already analysed the evidence with a view of showing that he will not make these economies. It is, surely, hardly necessary to deal with Mr. Haward's fatuous idea—I must be forgiven for calling it so—that he would only have to buy a net income of 980,000*l.* a year, minus 56,000*l.* for the sinking fund—by the sinking fund I mean the sinking fund which at present oppresses the companies. I do not think any other witness has ventured to treat the sinking fund which has been of late years imposed by Parliament as a permanent institution. It sounds paradoxical to say so, but, of course, if we are bought, and if we go to an arbitration, we are bought on the hypothesis that all idea of our purchase up to that time, was non-existent. We are bought, so to speak, as if we were never intended to be bought; but, on the other hand, the hypothesis of the sinking fund, as imposed by Parliament up to this time was that we were going to be bought, and that it was a temporary measure because we were going to be bought speedily—a temporary measure to prevent the increase of our value in the meantime. Of course, if you are going to buy us out and out, you must not consider that sinking fund as a perpetual burden to which we should have to be subject. Of course we should be bought on the hypothesis that that idea of purchase had never taken root in the mind of Parliament. It sounds paradoxical to say so, but the more you think of it the more true it is. The only question in my mind with regard to that sinking fund is, what has to be done with it? I have no doubt that if we were bought out, it ought to be handed back to the companies—not the slightest.

(*Mr. De Bock Porter.*) No deduction made for it?

(*Mr. Pember.*) Not at all, it is a most monstrous thing. That is exactly what I am arguing. Just think: I say if I am bought I am bought now on the hypothesis that everything, as between me and the public, was as it was before this sinking fund was invented. This sinking fund was only invented as a temporary measure to tide over the time between the time it was instituted and a speedy purchase, but it was not intended to be argued from that, that if we are to exist for all time, we are to be liable to that sinking fund. It is a contradiction in terms.

(*Mr. De Bock Porter.*) The sinking fund is the right of the consumer or, at least, of the ratepayer and the consumer together.

(*Mr. Pember.*) Certainly not.

(*Mr. De Bock Porter.*) Parliament has given it to them, has it not?

(*Mr. Pember.*) No, it has never been appropriated; Parliament was too cautious for that. What Parliament has said is this: We will put aside this sinking fund for the purpose of seeing that your value does not go up, as against the consumer, before he is put in possession. What the honourable gentleman is suggesting now might attack my argument that that amount of sinking und ought to be handed back to the companies, but it cannot attack my argument that you must not consider the companies as institutions permanently subjected to such a sinking fund as that.

(*Mr. De Bock Porter.*) But it must be taken into account in determining the prices.

(*Mr. Pember.*) Why?

(*Mr. De Bock Porter.*) There would be no object in making a sinking fund at all, if it had not that effect.

(*Mr. Pember.*) The most you can attach to the object of the sinking fund was, that supposing we are going to be bought in three years, they considered our ownership as over, as terminated for any purpose of increase of value to ourselves; and therefore they said, we will consider that our interest, or rather the interest of the London County Council, the consumers, as begun, and having begun, you must put by everything that goes by way of profit to what is falsely called a sinking

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fund. The real trouble is, it is not a sinking fund, if it were a sinking fund it would be something so terrible in its amount that it would sound quite ludicrous to anybody who was considering it. It was merely this, it was that all the increased revenue was to go to a particular fund, the application of which Parliament was subsequently to consider.

(*Chairman.*) Parliament has devoted it meanwhile to the purchase of shares of the particular company and therefore to the extinction of the capital.

(*Mr. Pember.*) I say that might attack my argument, that it ought to be handed back to the companies, but it cannot attack my argument which, as I understood, was directed against, what I understood to be the claim, namely, that in buying these companies you should consider them as permanently liable to this terrible thing which they called a sinking fund. The truth is, it is not a sinking fund, it is erroneously called a sinking fund. A sinking fund is a very small percentage of earnings spread over a long period to enable the owner of a thing to get all its value back. This fund is not a fund of that kind. Recollect what it is. Supposing that our expenditure were five millions in the next ten years we will say, and supposing we went on; this five millions would be supposed to bear interest at 10 per cent., whereas, as a matter of fact, perhaps it is only barely earning the 3 per cent., at which it was raised, in other words, there is a difference between 3 per cent. and 10 per cent. of 7 per cent.; it is supposed in the hands of the companies to earn the 10 per cent. If you conceive the companies, as in perpetuity, liable to a fund of that kind, which you call a sinking fund, it would mean that they would have to set by every year 7 per cent. I ought to have said 6, because there is 1 per cent. allowed for management; so a company paying 10 per cent. would have to set by 6 per cent. upon all its future capital by way of a sinking fund. Whoever heard of such a sinking fund as that? Why, in 20 years' time, or in less than 20 years' time, you would have more than paid back, without any compound interest, the whole of the capital involved; probably in about 12 or 15 years you would have done it. Multiply 6 by 15 years that is 90; 90 per cent. would be paid back, without any compound interest, in 15 years. Nobody can call that a sinking fund; you never heard of such a sinking fund. The truth is, as I say, that the sinking fund, as it is called, was instituted under the notion that purchase was going to be speedy and for a definite purpose. I leave, for the moment, the argument that it ought to be paid back to the companies, because it only complicates it, and is an unimportant matter for this point. All I can say is that in estimating what the value is of the companies, you must not treat them as if they are ever to be liable to such a scourge as that, to such a confiscation for all time.

(*Mr. De Bock Porter.*) Parliament has imposed such conditions upon every company coming compulsorily for further powers of borrowing.

(*Mr. Pember.*) Temporarily, under the impression that the companies were going to be bought in two or three years. That has been the idea of the sinking fund, as it is called, ever since it was first heard of in 1880, or 1883 I think it was.

(*Major-General Scott.*) Do you consider that it would be a breach of your vested rights if Parliament should say: We will cut short your capital expenditure as owners of these undertakings, and in the future you shall be only the managers for all the capital that has to be expended in the future?

(*Mr. Pember.*) Certainly I do.

(*Chairman.*) A breach of parliamentary right?

(*Mr. Pember.*) Yes.

(*Chairman.*) You have no parliamentary right over the future, as yet.

(*Mr. Pember.*) No, in that sense not, but if you mean by that that the amount of money absolutely paid over is to come off my value, that is another thing.

(*Mr. De Bock Porter.*) Parliament has given you the additional powers with that limitation.

(*Mr. Pember.*) Yes, but it is no use my saying the same thing over and over again; it did give us that limitation; you are speaking now of the sinking fund?

(*Mr. De Bock Porter.*) Yes.

(*Mr. Pember.*) Very well; it has given us that limitation with regard to the sinking fund under the impression that we were going to be bought at once. Now,

when you turn round and ask me the other questions which the Major-General asked me, I quite admit—and that has been part of my case all the way through—that Parliament has said with regard to future capital: You shall make no direct profit except your 1 per cent. for management; and that is one of the reasons why I say that there is no profit to be got out of us by buying us, simply because our profit-making era directly out of new capital has gone. That is what I said on Tuesday afternoon. I said that is gone, and that is why it is no use buying us, and that has really been at the bottom of my argument all this morning.

(*Major-General Scott.*) Why does not that apply to the capital which is liable to the sinking fund clauses at the present time, Mr. Pember?

(*Mr. Pember.*) It does apply; I answer your question in the affirmative, but the honourable member's (*Mr. De Bock Porter*) in the negative. I answer your question in the affirmative. I have said all along, Sir—and that is part of my contention—that we have passed the era—if you recollect, I used the phrase—of raising the money by 10 per cent. or 7 per cent. shares; and the era of raising money by loan and auction clauses has supervened. Therefore I said, and I am quite sure I could find the phrase in the report of my speech—that being so, there is nothing to be feared for the future from the existence of the companies.

(*Major-General Scott.*) That was not my question, quite. My question was on the assumption that Parliament asserted that all the profits of the future capital expenditure should go to the consumer, except the cost of management.

(*Mr. Pember.*) Quite so. I admit it.

(*Mr. De Bock Porter.*) But you want the sinking fund back.

(*Mr. Pember.*) Well, Sir, I said that five minutes ago, but in order to get rid of a complication of that kind, forget that I have said that. I merely said so incidentally. If you ask me what I thought ought to be done with the sinking fund, I think it ought to be handed back. But forget that; it is not essential to the main flow of my argument. I pass it by. I forget it. But I quite admit the Major-General's position, and that is that for the future—and that has really been the backbone of my argument all the way through—there is no profit to be got out of purchase, because there is no possible loss by letting it alone. The era of share capital is over. All we can do now is to raise the money as cheaply as possible with the auction clauses and all the rest of it, and get one per cent. for management. As I started, I think this morning, it was by saying the whole question is whether there is a scintilla of advantage in the fact that the London County Council could borrow, say a quarter or an eighth per cent. cheaper than we can. I have dealt with that, and I say, no. But I quite admit that Parliament has taken the line that the Major-General suggests to me, and has said you shall make no profit directly out of any of the capital you raise, you shall get no profit out of that, you shall pay yourselves no percentage on that. The only thing that it shall do is indirectly to enable you to obtain your 10 per cent. or 7 per cent., or whatever it is upon the capital that you are still entitled to earn that upon.

(*Major-General Scott.*) But the sinking fund clauses, Mr. Pember, prevent any addition which will hasten the time when you will be earning 10 per cent.

(*Mr. Pember.*) No, I do not think so, as I understand the sinking fund clauses they have not gone that length, I should require to read the sinking fund clause again, but my present impression of it is that what you do is to take the dividend, the whole dividend which a company is paying, and when you have taken the whole dividend that the company is paying you suppose that the million or two million, or whatever it is, is earning the same amount, and you pay over the difference minus the 1 per cent. for management, that is as I understand it.

(*Major-General Scott.*) That is what I understand also.

(*Mr. Pember.*) Let us suppose the violent case—let us suppose that the new capital earns more than 10 per cent.; as a matter of fact supposing it did, supposing it earned 12 per cent. and that 2 per cent. enabled the company to declare another 1, do you see, on its general capital, that particular bit of capital would not get that whole 2 per cent. to itself, it would only be supposed to earn a share in the increased dividend of

the company, which is 1 per cent. and not 2 per cent. more. It is not very easy to see, I admit, but that is really what it is, and I believe it might well be that the expenditure of certain portions of the new capital might be so productive that they were absolutely more productive than the capital already in existence. It is possible. If so, and I only put it as an hypothesis to show where the argument leads—if so, and it caused an increase of 2 per cent. in the dividends on the old capital it would only be credited with the amount of its own share in the whole of the dividend. For instance, if the dividend jumped from 8 to 10 then it is quite true it would be credited as taking 10 per cent., but then it might be only one million as against five of the other, and then it would only get one-fifth of the increase.

(Mr. De Bock Porter.) Parliament has not indicated any time during which this sinking fund clause operation is to run; it has been imposed now for the last 5 or 7 years, I think.

(Mr. Pember.) I know.

(Mr. De Bock Porter.) Every time a company has come to Parliament.

(Mr. Pember.) I have told Parliament so over and over again, I have said you instituted this as a temporary thing under the suggestion that purchase was going to take place in two or three years, and Parliament said—yes, the purchase has got delayed from one reason and the other, but purchase is still in the air, and because purchase is still in the air we shall continue the fund.

(Mr. De Bock Porter.) But Parliament intended the sinking fund should be taken into account in any question of the purchase.

(Mr. Pember.) No.

Mr. Littler.) Never.

(Mr. De Bock Porter.) Most assuredly.

(Mr. Pember.) No, how can it be? The money is paid over and gone. All I can say is that from the moment that purchase takes place—perhaps that is the best way to put it—the operation of this precious fund which they call a sinking fund will be over; it will be over and done with, and there is an end of it. There will be no more operation for the sinking fund, and the arbitrator will have to treat it as though that portion had ceased. That is the best way to put it.

(Mr. De Bock Porter.) Assuming purchase to be postponed for another five years, the operation of the sinking fund up to that period will be taken into account in purchase.

(Mr. Pember.) That is to say we shall have lost so much money, but still at the end of five years the arbitrator will have to say the sinking fund is over now. Whenever the arbitration takes place the operation of the sinking fund will be over.

(Chairman.) It seems to me that the object of the sinking fund clauses was to prevent you from swelling the increase upon your share capital so as to make the purchase money of that share capital large.

(Mr. Pope.) That is so.

(Mr. Pember.) Quite so, and undoubtedly, I accept that in the fullest sense, but what I say it was not intended to do, is this:—It was not intended to enable anybody to say to the arbitrator—if you had gone on living, that sinking fund would have gone on too; if you had lived for another 50 years it would have gone on in such and such a way; if you had lived for another 100 years it would have gone on in such a such a way; or if we are to be considered as having to live for ever, it would go on in such and such a way.

(Chairman.) Would it not be a fair consideration for the arbitrator to take this into account? Looking at the mind of Parliament as manifested for the last few years, these companies must not insist upon getting compensation for a prospective income, because they can get no prospective income by an expenditure of fresh capital, they can only get the interest they pay on that fresh capital and the 1 per cent. which is the assumed cost of management.

(Mr. Pember.) Yes.

(Chairman.) Therefore their expenditure of fresh capital cannot bring them increase of income, they can only get an increase of income by the greater productivity of their old capital; that is a small thing, and, therefore, their prospective income is to be disregarded.

(Mr. Pember.) Not disregarded, but I would say it is diminished to that extent.

(Chairman.) Yes, diminished.

(Mr. Pember.) Of course you have got to recollect that their districts are not filled in yet, and all the rest of it.

(Chairman.) Yes, but seemble they would not be able to supply if you fill up those districts, except by means of the borrowed capital which does not increase their income.

(Mr. Pember.) Stop a minute, if you do not mind my saying so.

(Chairman.) I do not mind being contradicted in the least.

(Mr. Pember.) Supposing that capital of which you are now speaking was such as did enable not only the 10 per cent. of itself to be earned, or 7 or 8 per cent., whatever it is, but supposing it was productive enough to enable 10 per cent. to be earned in the five millions of capital, we will say behind it, and that the whole of the six millions—which is the one million, and the five millions behind it—then returned 10 per cent., my answer is that 10 per cent. on a million is 100,000l., but we should take off 1 per cent. for management, which is 10,000l., we should take off the amount of interest on borrowed money which we will call 3 per cent. for the moment, that is the 40,000l., and we should hand over to the Chamberlain, or whoever is the man to take the money, 6 per cent. upon a million of money.

(Chairman.) Yes.

(Mr. Pember.) What we might have achieved might have been 2 per cent. on five millions.

(Chairman.) Yes, but that you are prevented from achieving.

(Mr. Pember.) No. That 60,000l. is the most he can get. Supposing that the million enabled me to earn 2 per cent. more upon five millions, which is 100,000l. more I should get that 100,000l., and he would get his 60,000l. on the million, which is 6 per cent.—the difference between 4 and 10.

(Chairman.) No, the difference between 6 and 10; you must hand him over the difference between 6 and 12.

(Mr. Pember.) No.

(Chairman.) Yes, because you are supposing your million productive enough to pay an extra 2 per cent. upon the whole of your capital.

(Mr. Pember.) Yes.

(Chairman.) Not only 12 per cent. upon itself, but 12 per cent. on the five millions behind it.

Mr. Pember.) Yes.

(Chairman.) Very well, your sinking fund is to be the difference between the three plus one or four, and the 12 per cent.

(Mr. Pember.) No, excuse me, as far as I remember the sinking fund clause, it is this—you are to take what the dividend of the company was.

(Chairman.) Yes.

(Mr. Pember.) Supposing it was 10 all round—

(Chairman.) I thought you were supposing an extra million productive enough to earn 2 per cent. dividend more upon the whole of the capital behind it, namely, the five millions.

(Mr. Pember.) And bring it from eight, we will say up to 10 per cent.

(Chairman.) Yes.

(Mr. Pember.) Very well, supposing it was, what is the case? The company is paying 10 per cent. dividend now, then the sinking fund bit, you know, the million, is supposed to earn 10 per cent. too, and it earns 10 per cent.

(Chairman.) Yes, well.

(Mr. Pember.) It is supposed to earn 10 per cent. because the rest of the capital earns 10 per cent., and the company pays a 10 per cent. dividend. Very well, it earns 10 per cent.; how much of that has the Chamberlain got to get?—60,000l.—no more, no less. Before I pay him I take off the 3 per cent. for the interest on the borrowed money, I take off 1 per cent. for management, that is 4 per cent. or 40,000l., and I give him 60,000l., but in the meantime, as I say, I have gained

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Mr. Pember. 2 per cent. on the other five millions which I keep myself. I have raised my dividends from 8 per cent. to 10 per cent.

20 Mar. '99. (Mr. De Bock Porter.) The effect of the sinking fund then is this, practically, is it not—to impound the profit which would have accrued upon the capital which you borrow under the auction clause for the benefit of say, the public—at any rate, to take it away from the water companies.

(Mr. Pember.) No, sir, that is precisely what I am urgently denying.

(Mr. De Bock Porter.) That is the fact.

(Mr. Pember.) No, it is not, indeed; if it were the fact I would not deny it for a moment. Let me read the clause, which is the shortest way. This is the Southwark and Vauxhall clause of 1898, which is the latest.

(Mr. Pope.) Yes, that is the latest.

(Mr. Pember.) "The percentage hereinbefore in this section mentioned shall be equal"—just think—"to the average percentage of the dividend or interest paid for the year, in respect of which the percentage is carried to a sinking fund on all the capital of the company, whether ordinary or preferential stock, or share capital or debenture stock, with any premiums received thereon above the rate of interest which the debenture stock created under the powers of this Act was issued, together with an additional 1 per cent. for management." Now, you have got to put the whole thing into hotch-pot, and you say, now I have got that 100,000*l.*, and I have got six millions of money to pay dividend on, I pay what is equivalent, we will say, of course it need not be because there is the debenture stock to take into consideration, probably, therefore, it would be less: but take it at the worst, say that it enabled me to pay, instead of 8 per cent. last year 10 per cent. this, they would be enabled to have 10 per cent. upon their bit of capital, minus the 3 per cent. paid for the interest on it, and 1 per cent. for management, and that is all. The 60,000*l.* and all the rest is not touched by the sinking fund.

(Chairman.) That is true.

(Mr. Pember.) It is no use telling me what the fact is, and what the intention was; but take the words of the clause.

(Chairman.) Yes, but you are making an extravagant supposition, that the expenditure of a million enables you to make 10 per cent. on the million and 10 per cent. on the five million besides.

(Mr. Pember.) Recollect, my Lord, of course I took an arbitrary figure for the purpose—

(Chairman.) Of illustration.

(Mr. Pember.) For the purpose of seeing what it is. I deny that everything which that million or two millions, whatever it is, actually earns—supposing it earned 50 per cent.—I deny that that is to be handed over altogether.

(Mr. De Bock Porter.) But that will be a recurring payment every year.

(Mr. Pember.) What?

(Mr. De Bock Porter.) That 60,000*l.*

(Mr. Pember.) No.

(Chairman.) No; only in each year in which the extra 2 per cent. is earned.

(Mr. Pember.) Yes, and that will recur in every year—for that is what I had assumed the honourable member to mean—until the purchase takes place; but when you are valuing what the value of my income is, and what the income of my company is, you are not to say: "If that had gone on for ever, that would have recurred for ever, like a recurring decimal." It would not; the whole basis of that sinking fund was, that it was coming to an end, because I was going to be bought; and the hypothesis upon which I am going to be bought is that I am, otherwise—

(Mr. De Bock Porter.) If Parliament had the intention which you appear to indicate, would it not have fixed a limit of years during which the sinking fund only would operate?

(Mr. Pember.) Just think for a moment of the *impasse* to which you get if you adopt that argument. If the notion that this precious thing which they call a sinking fund, and which I have got no other name for,

is to go on for ever, that is on the hypothesis that I am not going to be bought at all.

(Mr. Pope.) It is not intended as a permanent charge.

(Mr. Pember.) It cannot be intended for a permanent charge, because that would be tantamount to saying I am never going to be bought at all. It was imposed on the supposition that I am going to be bought at once.

(Chairman.) And if you are not bought at once, your shares shall be bought, so you shall be extinguished gradually and painlessly.

(Mr. Pember.) If you can buy me up; and then you will have continually to buy me up at the market price.

(Mr. De Bock Porter.) The noble Lord means by the operation of the sinking fund?

(Chairman.) Yes.

(Mr. Pember.) The noble Lord also says—and he is quite right—that if the sinking fund was to go on for ever like that, that they would have to go into the open market and buy shares, and at last they would get intolerably dear.

(Chairman.) That may be.

(Mr. Pember.) Another matter is, the thing bristles with absurdities when you come to look upon it; you cannot get out of the fact that that sinking fund was not very thoughtfully imposed by Parliament under the idea that the companies were going to be bought, and because Parliament had a horror of increasing their capital commitments in the meantime, so that they should be able to show to the arbitrator that their values had increased enormously: that is the real meaning of it.

(Chairman.) It is quite true that the sinking fund clauses have a look of temporary operation only with a view to purchase.

(Mr. Pember.) That is it.

(Chairman.) But they also have another aspect of permanent operation in the way of gradual extinction of the share capital of the companies.

(Mr. Pember.) That, I say, Parliament did not enact them for.

(Chairman.) Well?

(Mr. Pember.) If you were to see the "Debates," my Lord, and see what object Parliament had, you would find that that was so; and so much so that, in certain other clauses connected with the Staines Reservoir, they distinctly say that, if purchase takes place within seven years, such and such a thing shall be done. There is no doubt that that was the idea of Parliament.

(Mr. Lewis.) I suppose your contention, Mr. Pember, is this, that this fund, the Chamberlain's Fund, is a fund kept in suspense?

(Mr. Pember.) Yes.

(Mr. Lewis.) If it had been intended in connexion with recent borrowings that it was to be a permanent thing, would not Parliament have ordered the stock to be cancelled?

(Mr. Pember.) Yes.

Mr. Lewis. Is the stock cancelled?

(Mr. Pember.) No.

(Mr. Lewis.) Therefore the stock really is for the benefit of the companies in the event of there being no purchase, and not for the benefit of the companies in the event of their being purchased?

(Mr. Pember.) That is it; that is really what it is. That is what I meant. I daresay I put it more clumsily than Mr. Lewis has put it. I put it thus: Parliament is in a certain mind about purchase—or was, we will say, in a certain mind about purchase—and it made a provision while it was in that mind; if Parliament changes its mind about purchase, and says we are no longer to be bought, then that provision, which was made when it was of the opposite way of thinking, ought to be brought to an end.

(Mr. Lewis.) And the stock will go back to the companies?

(Mr. Pember.) I should say the stock should go back to the companies.

(Sir John Dorrington.) And the arbitrator could take that view, could he?

(*Mr. Pember.*) I do not know whether he could or not; but, as I said before, I beg to disjoin myself, so to speak, from my own argument on that point in order to make it perfectly clear what my argument is on the other. I say that Parliament has not said that every million of money which you raise shall have allocated to itself every single sixpence that you make over and above your present dividend unless you make it by increased business within your own limits and without reference to that expenditure. Parliament has not said so, but Parliament has said you shall consider that every million that you spend in the future is part and parcel of the general capital of your company and is earning as much as that general capital of yours, whether it is 6, 8, or 10 per cent. all round; and for that purpose the general capital is extended to include debentures and all the rest of it. It shall be considered to be part of that general capital. If that capital earns 6 per cent. then you may deduct 3 per cent. or whatever is the price at which you raise money, and you may deduct one for management—call that 3 and 1, which is 4, and if you all round are earning 6 per cent. then you will hand over 2 per cent.—on what? Not on the whole of your capital but on the capital which is the subject matter of the sinking fund. 2 per cent., and that is all. That will be 20,000*l.* on each million. The rest belongs to the companies. It has not been touched by any of these sinking funds, and I am perfectly certain that the legal acumen of the noble Lord when he comes to look at that sinking fund in any form he likes to look at it will enable him to come to the same conclusion that I have come to. Parliament has not touched it. I say the same to Mr. Oripps. I am perfectly certain that any lawyer looking at it will say that that is all they are entitled to get and that that only is a temporary measure. It will be over whenever the purchase takes place, and it cannot be regarded as a thing, which, if there had not been purchase, would have lasted for ever, because the very condition, if there had not been purchase precludes that idea. There is purchase, and there is an end of it. It was intended to meet the case of purchase and not a case of non-purchase. I cannot carry that argument any further.

Now, at the time when we broke off to consider this question I was just saying it was hardly necessary to deal with Mr. Haward's fatuous suggestion, as I called it, that he was able to buy a net income of 980,000*l.*, minus the 50,000*l.* which he treated as being amenable to the sinking fund. Now, to turn to Mr. Haward's calculations (c) I have shown abundantly, I think, that the question of saving or not saving—

(*Chairman.*) I beg your pardon, you said something there which was new to me. Mr. Haward claimed to deduct 56,000*l.* in respect of the sinking fund from the income.

(*Mr. Pember.*) He did.

(*Chairman.*) Where?

(*Mr. Pember.*) That was the place where he was talking of the net income of 980,000*l.*; he said, what I shall really have to buy is 980,000*l.* minus 56,000*l.* which is amenable to the sinking fund.

(*Chairman.*) That is new to me. I had not caught that.

(*Mr. Pember.*) It is a fact; he did say so. Would you mind my having that found for you, so as not to waste your time?

(*Chairman.*) Yes. It was quite new to my mind.

(*Mr. Pember.*) He says so, my Lord, I know. Now, I have said already that the question of his saving or not saving the whole or some part of his 50,000*l.* a year, or even the chance of his making a corresponding loss by either perverse or unskilful management—

Mr. Baggallay very kindly has found me the reference to that. It is Question 2767. "But you have given a certain amount of revenue 980,000*l.*?"

(*A.*) Yes, but that 980,000*l.* is the amount of the income which would be available for the purchasing authority; but it would not be the amount of income which the companies will have at that date, because out of the 980,000*l.* they will have to pay about 56,000*l.* a year at that date to the Chamberlain's sinking fund, so that the purchasing authority would be in possession of 980,000*l.* a year, whereas the companies will have to part with 56,000*l.* a year to the Chamberlain, and, of course, the income which the purchasing authority buys

"will not be the 980,000*l.*, but only the 980,000*l.* less 56,000*l.*" I knew he had said that.

(*Chairman.*) I am much obliged to you. That had escaped me, I confess.

(*Mr. Pember.*) I was about to say that I have already shown, I think abundantly, that the question of whether he can or cannot save 50,000*l.* a year, or whether on the other hand by either perverse or unskilful management he may lose a certain amount, say 50,000*l.* a year, or more would be insignificant in comparison with the graver stumbling blocks which are in his way.

Let me capitalise at 3 per cent. the array of his difficulties. Here I am entitled to take into consideration his 50,000*l.* a year because he says, mark you. I am going to have a net income of 1,030,000*l.*, and that includes the 50,000*l.*—that is 980,000*l.* plus the 50,000*l.* Now I propose to capitalise at 3 per cent. the array of his difficulties. First of all, I say you will not save this 50,000*l.*; I do not believe you will save a shilling of it, and I take off this item, therefore, from his 1,030,000*l.* I capitalise them all at 3 per cent., because it is easy so to do; you may make it 2½ or you may make it what you like, but the lower the percentage you take it at the worse for him, of course. However, first there is this 50,000*l.* I capitalise that at 3 per cent.—I am content with that—and that makes 1,650,000*l.* Secondly, there is the 250 million gallons minimum over Teddington Weir (the provision for the extra 50 million gallons over Teddington Weir) now that is 2,600,000*l.* And thirdly, there is the cost of the severance which I put still at a million; and fourthly, there is the 250,000*l.* loss a year, or whatever you may think is the right amount to adopt for that, which makes 8,300,000*l.* That means 13,550,000*l.* Now, if you like to knock off half, the 250,000*l.* if you please, which is half the 8,300,000*l.*, and say that he will only lose half, that is doing more than reducing the 250,000*l.* to 125,000*l.*—a great deal more; but take off 4 millions from the 13½ millions and you still have 9½ millions for the loss to London. Now you cannot put the thing more crisply than that, I think.

(*Chairman.*) Just give me those figures again.

(*Mr. Pember.*) First there is the 50,000*l.* savings which I am entitled to take off now, because I am dealing with the 1,030,000*l.*, take off the 50,000*l.* savings and capitalise that at 1,650,000*l.*—

(*Chairman.*) How do you mean capitalise that?

(*Mr. Pember.*) I will tell you—in this way. Supposing a man who is such a borrower as the London County Council is asked to sacrifice 50,000*l.* a year income, he has a right to say "I can borrow money at 3 per cent. or 2½ for the matter of that, therefore that 50,000*l.* a year represents to me 33 years' purchase if it is only 3 per cent. on 50,000*l.*" And it does; he sacrifices that, if he does not make the saving, because to him 50,000*l.* a year would produce 1,650,000*l.* It is quite clear, every time the London County Council sacrifices 10,000*l.* a year, they sacrifice in perpetuity at least 330,000*l.*

(*Mr. Lewis.*) 3,300,000*l.*

(*Mr. Pember.*) No, 10,000*l.* a year would be 330,000*l.*; 100,000*l.* would be 3,300,000*l.* Do you follow me, my Lord, now?

(*Chairman.*) Yes.

(*Mr. Pember.*) Every time they throw away 10,000*l.* a year, they throw away 330,000*l.*; every time they throw 100,000*l.* a year, they throw away 3,300,000*l.* at least. I say, therefore, that if they only reduce the rates in London instead of to that which is represented by a loss of 250,000*l.* to a loss which is represented by 100,000*l.* they would still lose 3,300,000*l.*, or the equivalent of it. There is no question whatever about it.

(*Chairman.*) Those items that you have gone through this morning come to, capitalised, how much?

(*Mr. Pember.*) 13,550,000*l.*, capitalised at only 3 per cent.; but, inasmuch as they say themselves, they can borrow under 3 per cent., though I do not suppose they can, because there is the sinking fund to be taken into consideration, that would be still higher, because they would have to do it at 2½ or on the 2*l.* 12*s.* or 2*l.* 15*s.* table, whichever it may be. But I am content to take it on the 3 per cent. table, just to show the enormous rate at which they would be losing money. I say that if they sacrifice the whole of the rates, taking the sacrifice as being the whole of the rates

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over Water London, it would be a loss of 8,300,000*l.* a year; but if you choose to say, well they would not sacrifice that, because it would not be over Water London, there would be severance, and it would be 161,000*l.* a year, then it would be something considerably less.

(*Chairman.*) Yes, if there is severance their income would be a great deal less.

(*Mr. Pember.*) Yes, quite so. That, I say, is another matter, which we cannot appraise in money. This we can. I say, supposing they lose half of the 250,000*l.*, they would then lose 4,150,000*l.* in the process of the reduction of rates, and that would take 4,000,000*l.* off their 13,550,000*l.*, and, to be accurate, it would leave them with a loss of 9,350,000*l.* in money. So, you see, I now get rid of any question of what the 250,000*l.* a year meant. At the very worst, supposing you reduce it by one-half, and of course you would not reduce it by anything like one-half, it would still mean many millions of money that he threw away. Supposing he bought the companies on the basis of taking over the debt and bought them on the Stock Exchange value, if you look at that table handed in at Question 2568, you will find the Stock Exchange value of the capital represents for the capital other than the debt about 30,000,000*l.* of money as nearly as possible.

(*Chairman.*) A little more—30,883,885*l.* I have got it.

(*Mr. Pember.*) Yes, you are quite right; it is very nearly 31,000,000*l.* As a rule, I like to understate these things rather than overstate them. He would not buy them at the Stock Exchange value, but still let us suppose he did; it would, in effect, have cost him 30,880,000*l.*, plus the 13,550,000*l.*, that he is going to throw money away to be diminished, of course if you make the diminution that I have suggested. If you take off the whole of the 13½ millions the ultimate cost to him would be 44½ millions, whereas he could only afford, as he says himself, to give 36½ millions, or something like it, with 100 years' sinking fund. Therefore he would be no less than 8 millions short. He could only afford 34½ millions with 80 years' purchase, and in that case he would be 10 millions short; and if he had a 60 years' sinking fund, then he could only afford to give 30 millions, and he would be 14 millions short. So that his deficit would be according to the years of the sinking fund for 100 years 8 millions, for 80 years 10 millions, and for 30 years 14 millions. As Mr. Pope points out to me, and of course I have got a note of it here, recollect, then, that he has got to buy the debenture debt, not at its par value, but if he pays cash for it, if they insist on being paid off at Stock Exchange value, that would be between another 8 and 9 millions.

Now, it might be convenient to look at his position from another point of view—not from the point of view of capital short-comings, but from the point of view of annual income, and it is, perhaps, even clearer that way. He says I should have an income of 1,030,000*l.*; now, I say you will not, because your assumed savings of 50,000*l.* all go to pieces. So I knock off that 50,000*l.* of income. Then, I say you are going to spend—as you say yourselves you must spend—and that everybody ought to spend who would be in your position, a sum of money which is represented by 2,600,000*l.* in maintaining the 250 million gallons minimum over Teddington Weir. That, at 3 per cent., is 78,000*l.* a year. Now he is going to lose the interest on the million which he is going to spend on this pretty severance, and I do not believe a million will anything like do it; but still, I take it, as that is what Mr. Middleton said. He is going to lose the interest on that which again I put at 30,000*l.*, and then, of course, I stick to my old figures; but you understand the modification that you may make if you think right. He is going to lose by the lowering of the rates 250,000*l.* a year; add those figures: 50,000*l.*, 78,000*l.*, 30,000*l.*, and 250,000*l.*, and you get 378,000*l.* a year loss in annual income. Take his net income as he puts it, because I must do that as I take off his 50,000*l.* for savings. Take his net income at 1,030,000*l.*, knock off these minuses of 378,000*l.*, and you get an income of 672,000*l.*, with which he has got to purchase a net income of 980,000*l.*

If anybody can undermine those figures I will forgive him. There is 1,030,000*l.* minus 50,000*l.*, minus 78,000*l.*, minus 30,000*l.*, minus 250,000*l.* That reduces the 1,030,000*l.* to 672,000*l.* The net incomes of the companies, he himself says, are 980,000*l.*; and he has got that 672,000*l.* to buy 980,000*l.* with. That is a process I should not like to go through.

(*Mr. Baggallay.*) It is 408,000*l.*

(*Mr. Pember.*) Not taking that 50,000*l.*

(*Chairman.*) You did not give us the figure of 50,000*l.*, did you?

(*Mr. Pember.*) Yes, I said I was entitled to take it off.

(*Chairman.*) You took his income there at 980,000*l.*

(*Mr. Pember.*) I was not entitled to knock it off, I admit, when I was making the old calculation, because I was calculating then on the 980,000*l.*; but now that I am calculating on the 1,030,000*l.*, which is the 980,000*l.*, with his 50,000*l.* added, I have the right to take it off; and it is 50,000*l.*, plus 78,000*l.*, plus 30,000*l.*, plus 250,000*l.*

(*Chairman.*) Then it is 408,000*l.* less.

(*Mr. Pember.*) It is, by Jove! I had not taken off the 50,000*l.*; and my learned friend was quite right. Then all I can say is so much the worse. He has got 622,000*l.*, instead of 672,000*l.*, to buy an income of 980,000*l.* As I said before, that is a process I should not like to go through often. All this is beside and anterior to the loss of growing income through the severance, and exclusive of the vastly greater extravagance of Wales. It is, perhaps, also worth noticing that all the burden of this transaction would fall on the administrative county of London, because the purchaser would have lost all income from the outlying districts by severance; and, of course, he could have no rating powers there. That is how things would stand; and now I think it is time that I went to the last topic that I propose to deal seriously with, and that is the question of the estimates for the Thames Scheme and the Welsh Scheme.

Of course I am now going to compare an expenditure which the London County Council say that they would have London committed to, with that which the companies hold to be necessary. If I can show, and I mean to show, that the expenditure that the County Council would be committed to in Wales would be something tremendous as compared with what we could do the Thames Scheme for; then, on to the top of these lost millions, which are antecedent to all that, I shall have to add the difference between the Thames Scheme and the Welsh Scheme.

The first thing to be done, it seems to me, would be to see what Sir Alexander Binnie holds to be the amount of water to be supplied at the two epochs of 1931 and 1948. He puts in the table at Question 1279; the reference may be useful to you. That table gives what he calls ultimate requirements for London, and, unless I have miscopied them, he says the average daily supply in 1931 will be 447 million gallons odd, and the maximum 537 million gallons—I leave out odd figures. The average for 1948 will be 594 million gallons, very nearly 595 million gallons, and the maximum 713 million gallons. These figures only seem to me to be justified by Sir Alexander Binnie's desires. They represent for 1931 at 35 gallons per head, a population which is as nearly as possible 13 millions—far beyond the estimate of the Royal Commission which was 11,191,000 I think I am right in saying. They similarly represent for 1948 a population of almost exactly 17 millions. If I choose to take them, and perhaps it is fairer to Sir Alexander Binnie that I should as representing a supply of 40 gallons per head, they would represent 11,175,000 gallons in 1931, and very nearly 15 millions in 1948.

Of course, I am entitled to take the Balfour Commission figure of 35 gallons per head, and then I say that he overstates the population according to them by 1931 to the tune of very nearly two millions. Of course, they did not deal with the population of 1948, but that he would take at 17 millions. Two questions, of course, arise for us here: (1) Is such a rise in the population reasonably conceivable? (2) Is the quantity of 35 gallons per head in the least degree too small?

As to the first, populations, of course, may go on increasing indefinitely, but so far as can be ascertained the population is not growing even at the rate taken by the Balfour Commission. We heard at a very early period of this inquiry that the census taken for the purpose of the equalisation of metropolitan poor rates and other rates had shown that the increase was not going on at the same rate at which the Balfour Commission supposed it would; and now may I ask you, my Lord, here to dismiss—and I shall give you a reason or two later on why I think it is right to dismiss it—the subject of the constituent percentages which each of the companies may furnish towards the 18·2 of

the Royal Commission. I cannot help thinking that you are not appraising the values of each of these companies as though you were sitting here as arbitrators to say what they were worth. The factors of the value of each company are not interesting for the purpose of our present inquiry. It seems to me that they are only interesting to you as a whole, because your business is only to see what is the general result of purchase on the finances of London. It seems to me, therefore, by parity of reasoning that it is only the general increase in the population and the needs and the cost of supplying those needs that concerns you. For this purpose we accept in all our calculations the 18·2 of the Balfour Commission for the purpose of treating London as a whole, and we accept the 35 gallons per head.

Now to deal with the 35 gallons per head, far lower figures you will not forget were presented to the Balfour Commission originally, but the Commission overruled them. Before Sir Joseph Pease's Committee, Sir Alexander Binnie, himself, called the 35 gallons per head a liberal allowance. I quoted to him, or if I did not, one of my learned friends did—what he had said before Sir Joseph Pease's Committee. The evidence is given at question 1534 of the present inquiry. I gave him the question and answer in the Blue Book Minutes of Evidence taken before Sir Joseph Pease's Committee, and it was as follows: "Then as I understand," says that evidence, these "figures confirm you in the opinion that 35 gallons a head daily is a liberal allowance to make for the immediate future. (A.) Yes." Sir Alexander Binnie then, you know, was giving evidence against the supposed requirements of the company and the capital powers which they were asking from Parliament, and he said they are asking a great deal too much because they do not want it. Then he was concerned to minimise the 35 gallons per head. However, other people have sinned in the same way, and you see I say this with a smiling face of poor Sir Alexander. "Then, as I understand, these figures confirm you in the opinion that 35 gallons a head daily is a liberal allowance to make for the immediate future? (A.) Yes, as I put it to the Royal Commission when I was before them, you must recollect that at that time I was giving evidence against such rates as 25 gallons a head a day, and 30 gallons a head a day, which were put in by the companies, and I was trying to show the Commission what was my opinion with reference to those quantities, and I said that 35 gallons per head per day would possibly allow for a little decrease at the present time, and it would also allow after that decrease had been made up by the growing habits of the use of water for perhaps a little increase." In other words he gives a long and elaborate answer, and so many of these gentlemen do not seem to be able to give a short one, perhaps because they have not got time like the late Dr. South. But this is an answer to the question about 35 gallons being a liberal allowance, and he says, yes it is.

There are very good reasons, I venture to say, my Lord, for thinking that 35 gallons so far from not being enough is highly excessive. It means 28 gallons for domestic supply. Now London, as we have heard, abundantly, is just now passing through a transition period, of which, it has very nearly got to the end, in regard to water consumption. Constant supply of late years has been advancing with very great strides. It was 64 per cent. of the whole supply less than 10 years ago. It is now 89 per cent. Everybody seems to agree that the first consequence of giving constant supply is an increase in the consumption, but, ultimately, it reduces it. The engineers have told you that practically the giving of constant supply must precede the insistence upon proper fittings and hence its first consequence, namely, increase in consumption.

Now just see Mr. Hawksley's evidence, which is at questions 21,107 to 21,138. I am not going to read it to you, because it is lengthy, and I have boiled it down; but it is worth while that you should have the reference. He says Oxford was 80 gallons per head, and it is now 20; Norwich was 40, and it is now 16; Sheffield was 39, and it is now 17; Bradford is 21 for domestic and 19 for trade; and Manchester is 17 for domestic and 17 for trade. In his table put in at question 21,153, which it is quite worth your while looking at, he gives a list of 15 towns where the domestic supply hangs at about 18 gallons per head. They are undoubtedly representative towns. Let me say, it is no impeachment of the value of that table to say that it is a selected list. Any list

to show what may be done to justify even a plea for economy by ascertained economies must be selected, just in the same way as one made up to justify extravagance by extravagance—with Glasgow probably at the head of it—would have to be highly selective too. Now unless all these eminently important towns, including, mind you, Manchester and Liverpool (for they are both in the list) with Thirlmere and the Vyrnwy at the back of them, stint themselves in water, 28 gallons for a domestic supply is far too much. Just look: You have got Birmingham 17, Bradford 21—I only take the more important ones—Huddersfield 14, Leeds 24, Liverpool 20, Manchester 17. Do you suppose that Manchester, which, to my certain knowledge, has got abundance of water, and Liverpool too—do you suppose that if they wanted more than 17 or 20 gallons, that they would not take it with those two great lakes behind them? Sheffield is a large town, and Sheffield is 12·77 gallons and Sheffield has got a big supply. But I did not quote Sheffield in the first instance, and for this reason that Sheffield is before Parliament this year asking for a new supply.

(Mr. Pope.) No.

(Mr. Pember.) My learned friend who appears for the Bill—I am sorry to say I could not give him such poor assistance as I might, because I was retained on the other side—tells me knowing the contents of the Bill, which I do not yet know, that it is only asking that the Derwent may be reserved for them in case they want it in the future. Now, I say, unless all those towns which have got such resources behind them, stint themselves for water, the 28 gallons for domestic supply is far too much, and surely it is common sense, my Lord, is it not, to say that domestic supply ought to be per head pretty much the same all over the country in cases where there is abundance of water? If the supply, I say, is abundant and if every place is equally well managed, if London were reduced to the level of these towns for domestic supply, its normal trade consumption, which is from 6 to 7 gallons, would bring it up to exactly Sir Frederick Bramwell's original estimate—say from 18 plus 7—(I give the trade supply at 7)—to 25. Sir Frederick Bramwell only abandoned 25 gallons as being the proper amount in deference to the finding of the Balfour Commission, to which he says he bows.

(Chairman.) No, it was in deference to facts that he had ascertained himself.

(Mr. Pember.) I was going to say that, to what he calls the logic of facts.

(Chairman.) Some facts that occurred to a company of his own, I forget where now.

(Mr. Pember.) Somewhere in Surrey, I believe.

(Chairman.) Yes.

(Mr. Pember.) Now, you have not only got this extremely suggestive evidence as to what might be done in other towns, which I say, of course, is a suggestion of what might be done in London, but surely Mr. Gill's statement, for instance, of what he has done in the district of Chelsea, is something like an indication of what may be done elsewhere. He has by the use of Deacon's waste meters, reduced 7,349 houses to a consumption of 18·6 gallons per head per day. Since then, the New River have given you very similar figures, with differing amounts, of course, for the number of houses to which they applied the system. The Lambeth and East London have also given you very similar results from their attempts; and one or two of the other companies besides. That I say in order to show that 35 gallons per head per day is ample. But I am not put to plead 25 gallons per head. My estimates are all based on 35. All Mr. Middleton's, and all Mr. Hunter's, are based on 35, and I maintain that to insist on more—40 gallons, for instance, as Sir Alexander Binnie does—if you take the future population of London at the Balfour level, is simply a graceless extravagance, and that his insistence is a warning of what the financial results of purchase will be.

I will tell you why I call it a warning more particularly. There is little doubt it is a warning, and a wise one. The elective element is the real danger when you come to deal with an owner like the London County Council. The population is largely used to waste, and there will be a reluctance on the part of the London County Council to control its constituents in the matter. We have had abundant evidence of that.

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Now, taking the epochs of 1931 and 1948, the issues between the companies, and the London County Council are clear. We propose to find 35 gallons per head per day for a population increasing on the Balfour ratio all round, and we propose to find it out of the Thames, the Lea, and the wells. Sir Alexander proposes to find 40 gallons per head per day, and to go to Wales for everything over 300 million gallons—not 300 millions gallons from the Thames, but 300 million gallons in all. He admits that the 300 million gallons from the Thames, Lea, and the wells, will be exhausted in 15 years, but he admits also that it is good till then; and that he has done two or three times over. You will hardly want the references for that, I think. I cannot forbear asking, as he has done that so repeatedly, what on earth is the meaning of the persistent iteration by other witnesses that all the late expenditure authorised to the companies has simply been not for fresh supplies; but to bring our present supplies up to date; how often did we hear, that in the beginning of this inquiry? Sir Alexander said, and it is quite true, and he proposes to use them, that they are good for the next 15 years, and then he goes on to say, I must set to work at once to be ready to have 147 million gallons for further supply in 15 years. You will find that in answer to Question 1296: "That I show, for reasons which I shall be glad to explain, if it requires any explanation, that outside the Thames and Lea valleys in 1931 we should require, in round figures, 147 million gallons." That will cost him, he says, just previously 14,112,800*l*. Mr. Pope got out of him very clearly that this 14,000,000*l*. must be spent in one block. I did not know until I came to read the evidence that he had said that so clearly and completely, but he has. However, says Mr. Pope to him at Question 2068, "And, therefore, you should commence your expenditure about 1900 if you are to get the water by 1915. (A.) Yes." And, says Mr. Pope, "Of course the works will be entirely unproductive until they are in a position to deliver water. (A.) Undoubtedly. (Q.) And that would be the whole quantity of water which these works would be calculated to deliver." Then he goes on to talk about instalments which I need not deal with at the moment. What he says he shall do is, he shall make a reservoir for 127 million gallons, or for 133 million gallons, and an aqueduct for the whole 200 million gallons, and only the iron pipes, as Mr. Pope gets out of him, could be laid on what he calls the time to time principle, and he admits, of course, which is one of the main distinctions between his scheme and ours, that we could do ours *gradatim*. That is his first statement of his own procedure. That means, as I say, that they will have to set to work at once to spend this 14,112,000*l*.

I do not know how other people manage, but I find it very difficult, indeed, to follow this part of his evidence. He referred at one time to his Report of 1894, then to modifications of it, then to statements which he had made about capital to you—I mean to the Commission—neither of which I have had the pleasure of seeing. But at last, I think it came to this, that to reach the supposed requirements of 1948, namely, that which he had given to you in that table which I referred you to just now, about the ultimate requirements, he would want a further instalment of 147 million gallons. That would be thus: 300 million gallons from the Thames, the Lea, the wells, and all the rest of it now, and 147 million gallons in the first dance into Wales which is 447 million gallons. That clears him up to 1931 when that supply would be what engineers call exhausted, that is to say, the full amount would be used in London. Then he says he must have another 147 millions, which would bring him up to 594 millions which was the total figure in his table of ultimate requirements, 594,884,800 gallons. Now, that second instalment of 147 millions, he says, would cost 12 millions more. That is the figure he gives at question 1318. The construction of these two instalments, of course, would overlap one another. The first 147 millions, he says, must be begun at once, that is to say, in 1900, to be ready in 15 years as I have shown you. That is at question 2067. Similarly, the second instalment must be begun in 15 years' time on the hypothesis that it takes 15 years to make, just as the first instalment did; it must be begun in 15 years' time to be ready for 1931, when its first use begins. Both will be entirely unproductive until they are in a position to deliver water. Of course the use made of each, when it is once completed, will be a growing one, starting, so to speak, from nil, and going on until

the full amount that it can supply, is utilised for London.

Now, it is important to bear those two facts in mind when you come to consider a very large item of cost which the whole of Sir Alexander Binnie's estimates keep out of sight, and that is the interest on the unproductive expenditure. You have got two periods, recollect, of 15 years each, during one of which 14 millions is going to be spent, and during the other one 12 millions is going to be spent. For the whole of that 15 years not a shilling of that 14 millions of money will produce sixpence until it is ready in 1915, and then it only begins to return income at nil, we will say, to start with, and working up to its full power in 1931, when it will be discharging the full amount. And so with the second, the whole of this expenditure will be unproductive during the 15 years of its creation, and will then only gradually fructify during the next 15 years. Now, I say it is important to bear that in mind when you think of the enormous sum of money which is represented by unproductive expenditure and interest on capital. However, he plainly admits that by the year 1931, he will have spent 26 millions of money; 14 millions he will have spent by the year 1915 and 12 millions more he will have spent by 1931, and that will carry him on till 1948, when the whole of the 594 million gallons a day, according to him, will be used.

Now, I wish to goodness that he had stopped there, for then the issues between us would have been so simple. We could have said first, you are providing a great deal too much water; secondly, you are doing that even on your own figures in far the most expensive fashion, and thirdly your cost of doing it in the way you are doing will be much greater than you have stated it, because you have left out enormous charges for interest and other very costly items. Amongst others, by-the-bye, he left out all the interest which is lost upon works in progress because, as I say, these works overlap one another. He has flooded you with tables and estimates to meet all sorts of hypotheses; and we, I am very sorry to say, have felt bound to follow him. But before I go any further let me just interject one more parenthesis. The more problematical the estimated need—and I insist that the estimated needs of London 40 or 50 years hence are highly problematical—the more does common sense dictate that the wiser course would be to adopt what I will call the more flexible and adaptable scheme of supply. This, the Thames Scheme, undoubtedly is, because it may be constructed reservoir by reservoir, as Sir Alexander admitted, as I showed some time ago.

Let me further just advert to the paradox that this Welsh Scheme with its distance, 162 miles from London and its gigantic features, is likely to be cheaper than, or to be as cheap as, the Thames Scheme—so simple in its features, and to be made at the very doors of London. Also the further paradox that it is worth while, in spite of experience and of all possible scientific assurance as to the quality of the London water, to desert a magnificent watershed like the Thames, of something near 4,000 square miles, and go gallivanting off to one of about one-tenth the extent—115 square miles.

However, those considerations will not absolve me from the necessity of analysing some of these figures, and I must do my best to unravel the tangle. Before I embark on this, my Lord, let me say, that on the same day that he gave the evidence I have been citing he admitted distinctly, and it is worth while calling your attention to that, that he was not in a position to give an estimate for our counter scheme from the Thames. Major-General Scott, said: "He says that he is not in a position to give much information with regard to the Thames Scheme." That is the first that we hear about it; and he does not contradict that at all; next, at question 1327, in the same way he is asked by you, my Lord. "What is the capital cost of the Staines Reservoir Scheme per million gallons?"—(A.) That I really cannot say." He goes on to say: "It will be something in advance of 84,000*l*. per million gallons." Then he goes on to tell you exactly how he has got at that figure. He says, all he can say is, we are supplying 198 millions of gallons now and our expenditure has been over 16,000,000*l*; that is about 17,000,000*l*., and that works out at something like 84,000*l*. per million gallons. He says, in a question and answer a little lower down than that I cited, the Staines Scheme will do very much the same; that has cost, according to Mr. Stoneham, 16,000,000*l*. In answer to Question 1328, he says: "If you divide

"the 198 million gallons into that capital expenditure you get 83,492l. as the capital cost per million gallons to supply the amount." That is his way of doing it up to that time; and Sir George Bruce asked him a question which I think is extremely instructive, and in a minute I will deal with that. Once more I say, would to goodness he had contented himself with stopping there, for we say we only want to bring the Thames up to the Balfour level of 300 million gallons to provide for 1931, that is to find 114 million gallons over and above the 185 million gallons which is authorised, as you know.

If we could do that, according to Sir Alexander Binnie, at 84,000l. per million gallons, all I can say is (I have done the sum) that would work out at 9,576,000l.—which is not unlike our estimate let me tell you, to bring us up to the Balfour level of 300 million gallons from the Thames and about 120 million gallons from other sources, or 420 million gallons for the year 1931; against Sir Alexander Binnie's own figures for himself for a like amount got from Wales of 14,112,000l., and we could have him pretty well on toast as folks rudely say.

We could have enhanced the contract by adding a good deal to his 14,112,000l. in the way of interest, as I tell you, for unproductive capital. We might also have pleasantly asked him how much of the 84,000l. per million gallons of our present expenditure which he uses as a test for what our future expenditure will cost us in going to the Thames for the rest of the water, represented obsolete capital, which he and some of his friends would ask Parliament to strike out of our account, because, of course, if there is any truth in the revision of capital story, you must knock a considerable amount off the 84,000l. before you get at what the Thames Scheme really has cost now, so as to get out of it anything but very fallacious advices as to what it will cost in the future.

He repeats this method of dealing with the Staines Scheme two or three times over. He repeats it at question 2024 and I think that is worth looking at. The whole of the evidence there is occupied with the fact that he is deducing the future expenditure of Staines from what the past expenditure has been upon the Thames; and somebody says to him: "I cannot understand what on earth this previous expenditure on the water supply has to do with estimating the cost of a future extension," and so on. Then, again, he repeats it at question 2029, where he says: "There are many ways of looking at it; that is one way of doing it, and I have done it. (Q.) In your evidence you speak of 84,000l. as being the cost per million gallons, and so on." He says, "Yes, 83,000l. odd"; and it is 83,000l. odd. Yet this gentleman, having said that three or four times over on that 31st January, is so supple, so lamb-like in the hands of his own counsel, Mr. Freeman, that in re-examination only a very few questions further on, number 2205, he calmly tells you that he has thoroughly estimated the cost of the Thames Scheme. Mr. Freeman says: "Now to pass to another matter. 'You were asked various questions as regards the basis on which you calculated the cost of the Welsh Scheme as compared with the Staines reservoirs?'—(A.) Yes. (Q.) And you mentioned as one of the elements, that you had looked into the cost in the past as a guide?—(A.) Yes. (Q.) But did you also carefully calculate the various elements of actual cost of both those schemes? (A.) I did. (Q.) Would it be fair at all, to say that your basis is merely a comparison of the actual cost in the past as guiding you in the future? (A.) Certainly. (Q.) Have you calculated out the various elements of cost?" "I have," he said. All I can say is, that if he had, why on earth did he not tell Sir George Bruce so, why did he not tell Major-General Scott so, why did he not tell you so, my Lord, and my learned friend Mr. Pope? But up to that time we heard nothing of any estimates, and yet he could tell my learned friend, Mr. Freeman, an hour or so afterwards, as glibly as possible, that he has made an elaborate estimate and gone into all the questions of cost.

(Mr. H. W. Cripps.) What question do you say that is at.

(Mr. Pember.) Questions 2205 to 2209. Of course, I do not accuse Sir Alexander Binnie of saying anything that is not the fact, but all this must tend to show that his estimate for the Thames Scheme has been somewhat late, and, perhaps, somewhat incautious and perfunctory, and at all events must have been of so slight a character that he did not care to tell you that he had made the

estimate when you were all examining him in chief. But, as I have said already, I must follow him into his tables, and I must follow my own folk too.

Now the best way seems to me to separate the tables of the two engineers, particularly those of Mr. Middleton and Sir Alexander Binnie. Of course, I am not going to neglect such valuable evidence as that of Mr. Hunter; but I will separate these tables and estimates into two counter-groups. First of all there is Sir Alexander Binnie's estimate for the Thames and our estimate of the Thames, and then his estimate for Wales and our own estimate for Wales. Let us take the first group and counter-group, and let us go through Sir Alexander Binnie's first, discarding all we possibly can, because in this multitudinous array of tables the great thing is to get rid of all you can. Sir Alexander Binnie's first estimate was estimate A., handed in at question 9321. I do not think that there are any before that. I am inclined to think we may absolutely pass over this first, because, as you will see, it refers to the existing state of things. If the London County Council bought us to-day they would carry it out with an aggravated cost to London, by turning a minimum of 200 million gallons into 250 million gallons a day. Nor is it useful to you, my Lord, as disclosing any weakness in the condition of the companies, because it is not an expenditure to which we are at present committed. You will see it refers to a supply of 165 million gallons, that is to say, 130 of which we take from the Thames at present, and the 35 millions which we take from Staines. We are not committed to do anything with regard to the 130 millions at present, and therefore no arbitrator could take it into account in assessing our price. So I think we may dismiss estimate A altogether from our minds. Now take estimates B and C, handed in at the same question. I think the same remark applies to them to a very great extent, because although I shall have to refer to them for particular purposes later, they both apply, one to the figure of 185½ million gallons with a minimum of 200 over Teddington Weir, and the other to the same amount with a minimum of 250 million gallons. They disclose no weak point in our financial armour. The conditions of our supply up to 185½ million gallons are settled by law, and we are not bound at the present time to store the 130 millions out of the 185½, although we mean to do it as a matter of fact, and all our estimates are on the basis that we shall do it. But as a proposal up to 185½ million gallons the expenditure is common to us and the London County Council, on the 200 million gallons basis. Now these estimates are useful because they disclose on their own showing the real additional cost to London which the London County Council would expose London to, namely to contribute a higher minimum of 250 million gallons a day over Teddington Weir, which cost, as I have said, was above 2,600,000l. odd.

Now, lest anyone should say, "Oh, but when the purchase is effected these works of yours up to the 185½ million gallons will be so far completed that the change to the 250 million gallons will not probably be made," I answer, "Oh no, do not run away with any such idea." They are obliged to, and they say, everybody ought to be forced to do what is necessary for that purpose. The extra cost is entirely for storage. If you compare those two estimates you will see that the whole difference arises in the amount of storage rendered necessary by the extra 50 million gallons a day minimum. That, of course, could be easily added without altering the general scheme. The same vice is there as to the enormous amount of waste reservoir power for cleansing and evaporation of bottom water, as in later estimates. But all that is criticism which I reserve. Now, towards the end of the inquiry—at question 23,280—Sir Alexander Binnie put in estimate F, which gives the conditions of 1898. I do not think it necessary to criticise that. I daresay the arithmetic is right enough, and I assume that it would stand or fall by B. But as he is obliged to use the 185½ million gallons from the Thames his idea of the cost is his own affair, and I shall deal with that idea when I come to the quantities beyond 185½ million gallons, and so forth. Although, as I say, his storage probably is much larger than it need be, on account of the vicious idea he has got of the necessity for superior reservoir power. I have got nothing to do with that so long as it is only what he says he will spend for the 185½ million gallons. I am only concerned to say I shall not. By parity of reasoning I think I may pass over with very brief notice Mr. Middleton's estimates 1 and 2, which you

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will find were handed in at questions 17,465 and 17,549, and which of course refer to the 185½ million gallons, and which I say is common to both sides. But I should just like, as I go on, to note the contrast between them, because that contrast is important as a matter of principle underlying the estimates themselves. Estimate B of Sir Alexander Binnie is 4,705,185l. as you see. Without troubling you for the moment with Mr. Middleton's Estimate I, take it from me that the estimate for that amount is 2,148,168l. There is a difference of 1,570,017l. Now Estimate F of Sir Alexander Binnie, which is adapted to the condition of things in 1898, that is 8,115,665l. That is the new estimate that he put in, I think, at question 23,280. Mr. Middleton's Estimate 2, which is Estimate 1, similarly adapted to the conditions of 1898, is 4,104,600l.

(Chairman.) No, that is 1893.

(Mr. Pember.) No, excuse me, my Lord, Mr. Middleton's Estimate 1 is 2,148,168l. That is 1893, and I say, deducting that from Sir Alexander Binnie's B, which is 1893, you get a difference of a million and a half in round figures.

Those are the differences of figures. Now we come to F, 8,115,665l., which is the 1898 figure. Let me turn to Estimate 2 of Mr. Middleton.

(Chairman.) Then I think it should be borne in mind that those were estimates without distributing mains, and that Mr. Middleton afterwards corrected his estimate, when he had put in the distributing mains, and that clearly ought to be put in.

(Mr. Pember.) Quite so, but I am only contrasting those two, and it is right to contrast those estimates. Mr. Middleton's was 4,104,685l. I will deal with that question of the distributing mains presently. That makes a difference of four millions between the two.

(Chairman.) Yes, only Sir Alexander Binnie does include the distributing mains, and therefore it is not fair to compare the four millions and the eight millions. You are comparing the six with the eight, I think—I think so. I am speaking from memory.

(Mr. Pember.) Let us be quite sure about that, my Lord.

(Chairman.) I think that is so, if you look at Mr. Middleton's estimates including mains. They are estimates 3 and 4, and were put in at question 17,677.

(Mr. Pember.) I think your Lordship is rather mistaken in this instance.

(Chairman.) Am I?

(Mr. Pember.) Yes.

(Chairman.) Then, do correct me.

(Mr. Pember.) Will you look at the Estimate B of Sir Alexander Binnie, I will not trouble you to turn to it now, but I am reading from it. I get the reservoirs and I get the cost for annual pumping and the cost for for annual distribution. There is nothing about mains.

(Chairman.) But that means mains

(Mr. Pember.) No, excuse me, that is 2l. 10s. which is pumping supply. There are no distributing mains there, my Lord, I think, if I am right.

(Chairman.) You may be, I daresay. I am only giving my impression.

(Mr. Pember.) You will see it if you look at Mr. Middleton's estimate 2, because Mr. Middleton there sets out Sir Alexander Binnie's Estimate B. Now, you see, Sir Alexander Binnie's estimates give the annual pumping at 5s. per million gallons, distributing 55½ millions at 2l. 10s. per million gallons, and that has nothing to do with mains. On the contrary, he says there is nothing for the capital cost of engines and accessories to pump the 55 millions—not a word. It is only the cost of pumping. If you look at the asterisks about the distribution of the 55½ millions, he says this capitalisation has been made on the cost of pumping. That is Mr. Middleton's note, but still it expresses it, and I adopt it myself. This capitalisation has been made on the cost of pumping 55 million gallons per day, which will not be reached till 1916. It should be on the average less than half that quantity. Then he says the sum so arrived at should be discounted. That shows that Mr. Middleton agrees with what I say, that there are no mains included in that. It is only an estimate for pumping.

(Chairman.) That is quite right—that is so in that way. Then he gives a further estimate with the mains.

(Mr. Pember.) Those further estimates I shall have to contrast in another way, but as for these two, I am dismissing them as far as I can. For these two that is the real comparison. So far as they each go there is a difference of 1,570,000 in the first pair B and 1. There is a difference of 4,010,980 as between 2 and F in the second pair. Now we get the estimate D and the estimate E, and here we go on to the real ground of difficulty.

(Major-General Scott.) What question is that?

(Mr. Pember.) They were handed in at question 9321.

(Chairman.) This is on the 300 million gallons a day.

(Mr. Pember.) Yes. That is the 300 million gallons a day, and so we come to the terrain of the real question between us. His estimate D is 15,589,980l. That is for the minimum flow of 200 million gallons over Teddington Weir and the estimate E is for 18,039,000l. odd, and that, of course, is 250 million gallons over Teddington Weir. Now, let us first dispose of E and get that out of the way. It depends solely on the 250 million gallons minimum being demanded for Teddington Weir. For this purpose just let me say that no one has ever asked it except the London County Council themselves. The Royal Commission worked—and I state this in the presence of one of its members—but I have always understood that they worked upon that 200 million gallons basis as the minimum over Teddington Weir. The Thames Conservancy have never asked for more, and they have had abundance of chances. Mr. More has been in the box, I think, twice here, and other persons representing the Thames Conservancy, Sir Frederick, Dixon-Hartland and others, have been here, and they have asked for it even now. It would do no good to anybody. It would help no barge or launch up the river. What it might do for the penny steamer I really do not know. All I know is that it would not cover the broad mud-banks which are left by the low tide now, below Richmond Weir, and it is a very significant thing that that diagram, which was put in to show the difference between 150 million gallons minimum and 200 million gallons minimum—I forget whether it was 100 or 150, though 200 was the basis there contrasted, but be it 150 or 100 it does not matter.

(Chairman.) 100.

(Mr. Pember.) That is a very different thing, and I noticed it at the time—I noticed that that did not go on to show the extra volume of water either in width or in depth which would be achieved by the 250 millions minimum being super-imposed upon it. It would have been instructive to have noticed what that would have been. I have got my own notion that that would have been a very small matter indeed, and, therefore, it was not put.

Now, the denudation of the banks of the Thames in the upper reaches of the tideway, is the result of well-known causes. Its cure has been illustrated, and it has been partially effected by the construction of Richmond half-tide lock. Probably, something of the same sort at Hammersmith or Wandsworth would complete the remedy, because, when that remedy begins, you would then get so far down into the tideway, that there is nothing in the difficulty about the banks being uncovered. Of course, Mr. More would not commit the Conservators to such a scheme as that. They opposed the Richmond Lock, and for aught I know, they might oppose another. As Mr. More says, there are too many considerations that come in for him to accept another offhand, but it is clear that the 250 million gallons will be nothing worth having in the direction of covering the banks, or helping the navigation. Nor would it affect the scour of the river. That is done as everybody knows, and, as far as I know, everybody has admitted it except Mr. Balfour Browne, by the great floods. A trickle of 50 million gallons a day would not do it—two million gallons per hour, that is. That is, as nearly as possible it, and that only operates for a quarter, or ought I to say, perhaps, for half a day, so many hours before and after low tide. If I were sure of the date of the invention of this 250 million gallons minimum, I should think it would simply have been made in order to get rid of the difference between the cost of the Welsh Scheme, and the Thames Scheme, and to enhance the cost of the latter. Now, I think, I may get rid, therefore, of

the estimate E, and go to the estimate D. This estimate Sir Alexander Binnie has adapted to the conditions of 1898 in estimate G. They are both for the supply of 300 million gallons, and they are to be contrasted with Mr. Middleton's estimate 2, and his estimate 10. The estimate G, put in by Sir Alexander Binnie, was put in as the others were, at question 23,280, and it brings his total, estimate D, for the 300 million gallons out of the Thames, that is to say, to bring the Thames flow up to 300 million gallons under the conditions of 1898.

(Chairman.) May I ask, will you finish shortly.

(Mr. Pember.) I am afraid not by 5 o'clock.

(Mr. Pope.) In doing this, my friend is relieving me of a great deal.

(Chairman.) I thought Mr. Pember was representing all the companies.

(Mr. Pope.) No.

(Mr. Pember.) I think, for this purpose, I am. What my friend would desire me to do would be touch upon all the evidence. I do not think he will touch upon the evidence.

(Mr. Pope.) No, I shall not.

(Mr. Pember.) I have no right to speak for my friend, but I do not think this is a bad place to adjourn, because, as a matter of fact, this estimate G for 1898, and the estimate for 1893, which are the estimates in question, finish this point.

(Chairman.) Can you clear my mind before we rise to-night, as to whether the estimate D of Sir Alexander Binnie covers the 185½ millions only, or the 114½ as well.

(Mr. Pember.) Yes.

(Chairman.) Then estimate D, in reality, includes B.

(Mr. Pember.) Yes, I understand it so.

(Chairman.) I was not clear about that, I confess.

(Mr. Pember.) I think it must.

(Chairman.) I suppose so. It must be on the same footing.

(Mr. Pember.) The estimate D, which is to bring the supply from the Thames up to Staines conditions, the supply of 300 million gallons includes the expenditure necessary for 185½ million gallons. Of course, when I say the expenditure for 185½ million gallons, it is the storage that is still necessary for the 185½ million gallons, which has not already been provided for or authorised.

(Chairman.) Yes.

(Mr. Pember.) Then I will get on as fast as ever I can to-morrow, and I may tell you that I shall run through these estimates very quickly, because, of course, I know that the merits of some of them have been referred to otherwise, but I think I ought to get to the end of them.

[Adjourned till to-morrow at 12 o'clock.]

SIXTY-SECOND DAY.

Tuesday, March 21st, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

SIR JOHN EDWARD DORINGTON, Bart., M.P.
SIR GEORGE BARCLAY BRUCE, Kt., C.E.
ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
HENRY WILLIAM CRIPPS, Esq., Q.C.
ROBERT LEWIS, Esq.

CECIL OWEN, Esq., Secretary.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.
Mr. Pope, Q.O., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.

Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.

Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.

Mr. Richards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson, appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. PEMBER, Q.C., called to further address the Commission.

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My Lord, I do not feel quite happy at the way in which I dealt yesterday with the question of what is commonly called the sinking fund, but which I object to call a sinking fund at all, and which I think it is much safer and much more proper to call the Chamberlain's fund. Now recollect if you will that this Chamberlain's fund was started some years ago after Sir William Harcourt's Committee had reported in 1880 in favour of purchase, and the companies were treated at that time as nearly interim holders of their undertakings as it were *locum tenentes* of the future water authority whose appointment and constitution were imminent. It is perfectly true that for one reason or another since 1886 purchase has been delayed, and the interim or provisional state of things which was then contemplated has been protracted until now. And now we are face to face no doubt with a decision of Parliament which cannot be long delayed

after the promulgation of your report, whichever way it may be, when Parliament will say definitely there either is or is not to be purchase, and the provisional period will come to an end. But I insist that this Chamberlain's fund was established with a view of being maintained, and maintained only, to meet the conditions and during the lasting of the provisional period. And what is it? "On the assumption that you are going to be bought and bought speedily, we are not going to let you say, we have got one, two, three, or four millions of capital which we have raised since you determined upon purchase and which is worth to us so much"—that is to say, all the difference between the interest which we pay on it—because we raise it by loan—and what we can make out of it when we apply it to the general purposes of our undertaking. Parliament set to work, therefore, to say, "the profit which really belongs to this million"—I stick to the

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term "million" as a good arbitrary figure—"the profit which really belongs to this million we will not leave to you, we will give it over to somebody in trust for the future purchasing authority"; it is not a sinking fund, it has nothing whatever to do with a sinking fund, "and he shall hold it in trust for them." What is to be done with it they did not say. Probably it would be applied, unless I could persuade Parliament to the contrary, at the end of the period by him, if he was still unable to keep it for the benefit of the purchasing authority as part payment of the purchase. But that is a question which I leave. I am sorry I overloaded what I had got to say yesterday by any reference to that whatever. I was well punished for it, because it brought upon me that nemesis of irrelevant criticism for which nobody was to blame except myself. I leave that out of sight altogether this morning, and I simply say that is what Parliament said—the profit which naturally belongs, say, to this million you shall not have; but it shall be kept for the future purchasing authority. Now they said, "how are we going to find out what the amount of profit accruing on this 'million really is?' and then they said, "now you shall take all the capital in use at the time." I am now analysing as it were or giving the substance of the last form of the sinking fund clause, namely that of 1898—"you shall take the net earnings of all your capital, your 10 per cent. shares, your 7 per cent. shares, your five, four and a half, or whatever they may be, and all your debenture and loan capital generally, and you shall see what that pays altogether."

Now, let us suppose for a moment that in any particular company it paid 6 per cent. Very well. Then on this particular million the calculation would be this. Your earnings from it are 6 per cent.; 3 per cent., which the company pays to the holders of the bonds, 1 per cent. which they are allowed to keep for the purposes of management; there is, therefore, 2 per cent. on the million remaining; 2 per cent. on the supposed earnings of that million to be handed over to the Chamberlain. That 2 per cent. is, of course, 20,000*l.* It does not say that everything is to be handed over (if there was anything over and above that 20,000*l.*) which enabled the 6 per cent. to be paid upon the rest of the capital, or any portion of the 6 per cent. All it says is this—I have no doubt you have the clause in your hands, my Lord—"the whole of your capital thus included pays 6 per cent. on the average; you may retain three, you may retain one, and you must hand over two, and that is 20,000*l.*," and that is all the clause says. That operation of the clause holds good upon any amount of capital which is raised, on the supposition that any sinking fund, or rather any Chamberlain's fund clause may be put into an Act hereafter before purchase takes place, if ever it is to take place—if there is time—that would be the result of such a clause, and the operation of such a clause would cease at the end of the provisional period. But if Parliament had never, in 1886 and 1888 and 1890, or whatever the years were, contemplated any purchase at all on behalf of this supposed future authority, we should have had no Chamberlain's fund.

It was because of that, Lord Claude Hamilton, who is the chief "begetter" of these clauses, as they said of Shakespeare's sonnets, said distinctly, "It is with a view of the ultimate purchase by this future authority that we pass this clause," and that is the only view in which it was passed, and it would have been a heinous thing to have passed it otherwise. For just conceive what the result would be supposing such a clause as that was put upon us on the assumption that we were going to be left alone and not purchased. Everyone of our liabilities would have been preserved against us, and all the chances of our earning power by fresh capital would have been taken away for ever. Now Parliament surely never could have conceived such an idea as that. It would have been an injustice of the grossest kind. For instance, imagine what the operation of such a clause as that would be hereafter if the future expenditure, we will say upon the Thames, and one thing and the other, advanced to some 15 or 20 millions of money. Just conceive what would be the result if that clause was still in operation, and if the whole of that 15 or 20 millions of money was supposed to earn the same dividend with the rest of what should then be our comparatively small capital earned. Why, it would be something fearful. If the result had been that the whole of our capital all round earned 6 or 7 per cent., we should have to pay over to this Chamberlain's fund, 3 per cent. of 10, 15, or 20 millions

of money, whatever it might be. We know what that is. That would be 15 times 30,000*l.*—450,000*l.* a year. You cannot conceive that Parliament ever intended anything of that kind. Now that being so, I say that for all questions of purchase—and that was all that I meant to deal with yesterday—when you are conceiving of these companies you must conceive of them as companies existing in perpetuity, and inasmuch as this was not a condition which dogged perpetuity, but only a condition to be carried out during a provisional period before purchase, no arbitrator ought to say that you are to deduct from the perpetual earnings of the company either 50,000*l.* a year, such as Mr. Gomme suggested, or any other sum at all. The whole thing is over and done with, and that is all I meant when I made the unfortunate remark which drew down the criticism upon me. I think at the end of that period the money ought to belong to the companies. But I withdraw that altogether now. I do not say that it ought, or that it ought not.

All I say is that I make no statement about it at all; and I am very sorry that I did, and it serves me right for making an *obiter dictum*. Now, I say that, when you come to estimate the values of the companies as going concerns you will have to treat them as concerns existing in perpetuity; and you must not regard the provisional and transitional state of things, which by that time will have come to an end, and treat them as though they were not perpetuities but merely interim provisional states of things, as Mr. Gomme proposed to do.

(Mr. De Bock Porter.) All those clauses have been re-enacted for ten years, no definite time has been fixed?

(Mr. Pember.) Sir, if they had been re-enacted for a hundred years instead of for ten years, my argument, I venture to say, would be untouched. And that is what made me careful to say they were invented because people thought that purchase was not only in the air, but imminently in the air—they were invented to meet what was expected to be a short period. Circumstances over which the companies have had no control at all, and indeed you may say over which Parliament has had no control—the chapter of accidents—have protracted that provisional and transitional period, and all that the honourable gentleman therefore says is: "Do you claim that your argument holds good although this provisional period has from one cause and another been protracted for ten years?" To which my unreserved answer is "Yes." I do not think that the fact of its having been so prolonged makes any difference whatever. If you could show me that Parliament had said in the course of that ten years, we are going to give up all ideas of purchase; we are going to treat you as if you were in perpetuity, and we shall stick to our Chamberlain's clause—if you could find me anything of that kind in the debates of Parliament or the decisions of Parliament, I should bow at once to the suggestion of the honourable member; I should say that the ten years had worked a change. But I say it has worked no change. The only thing is, that instead of dragging on for one year or two years it has dragged on for ten. That is how I put it.

(Sir John Dorington.) Supposing this new capital does not produce the same rate of interest as the average of all the rest of the capital, still it has to contribute to the Chamberlain's sinking fund.

(Mr. Pember.) Yes, it has.

(Sir John Dorington.) What is the effect on the company? Have you considered that?

(Mr. Pember.) Yes; and that is what I have always put as the injustice of the thing. I have always said you choose to consider that this new bit of capital, whatever it is asked for, has got the same earning qualities and the same accidents as the old capital. That is a gross injustice. Parliament has done that and I cannot help myself; and that was one of the injustices with which they clogged the provisional or transitional period. I admit it. And a great injustice it is, as I ventured to tell them at the time, or have told them at all events from time to time, "just consider; I am asking for 500,000*l.*, we will say, to improve a filter bed, or to do something or another which will not enable me to supply another gallon of water or earn another shilling of dividend, that 500,000*l.* is supposed to earn dividends as much as was earned without its being there and no more. It will simply be added, as it were, to my statute book; it will not bring anything at all, and yet you conceive it has brought in as much as everything else has brought

"in up to this time." And that, as I have said, is simply the injustice of the Chamberlain's fund. That is all. But that does not militate against my argument. I only say, that making that provision, without drawing the distinction between possibly productive and certainly unproductive capital, Parliament did not do the companies justice. But that does not carry on the operation of the Chamberlain's fund one fig more beyond the end of the transitional period.

(*Chairman.*) If an arbitrator is trying to make up his mind as to the prospect of future earnings, of future prospective income by the companies, he would say to himself, they will have to raise in the next few years some 13 or 15 millions—I think that has been about the figure that has been given us.

(*Mr. Pember.*) Yes.

(*Chairman.*) That will be raised under the conditions of the Chamberlain's fund.

(*Mr. Pember.*) No, if you do not mind my saying so curtly, I say so really in order to emphasise the position. I say no, because he is then dealing with the companies as though they were perpetuities, and I say that if the companies were treated by Parliament as perpetuities, there would be no Chamberlain's fund and he must consider them as perpetuities when he comes to appraise them. That is the exact point I take.

(*Mr. De Bock Porter.*) The arbitrator surely would have the right to take into account the fact that the future earnings were tempered by the operation of those clauses.

(*Mr. Pember.*) No, because they will not be tempered—that is my whole point, that as soon as it is determined that there is going to be no purchase, there will be no tempering—that is my point. Do not forget that.

(*Mr. Lewis.*) It is quite clear that Parliament has not shifted its ground with reference to these clauses?

(*Mr. Pember.*) Absolutely.

(*Mr. Lewis.*) In the early Acts reference was always made to imminent purchase.

(*Mr. Pember.*) No, excuse me.

Mr. Lewis. Was it not in the earlier Acts?

(*Mr. Pember.*) No, there was nothing in any sinking fund clause from first to last about that. There has only been the original declaration of Parliament that this clause (I will not call it a sinking fund clause, for it is not) was put in in view of imminent purchase. Very well. Now that is the ground work of my argument. I say it was to meet a transitional period within the lapse of which it was to be begun, continued and ended altogether. That is my point. Now, when an arbitrator comes to appraise the companies, it is at an end. The whole thing is then over—the whole thing is over and done with. Purchase has come about, and then what the arbitrator has got to appraise is what the value of the companies would be if they were going on for ever; and if they had been going on for ever, their value would have been untempered by any such Chamberlain's clause, because it was not intended to meet perpetuity. It is in effect a perpetuity, and it would have been grossly unjust if it had not been made a perpetuity.

(*Mr. De Bock Porter.*) Until the statute is repealed those clauses will operate.

(*Mr. Pember.*) No, they will only operate till purchase. As soon as purchase comes about, all the statutes are repealed; they go; they are done with. But I am perfectly certain that if the noble Lord and honourable members will bear this in mind, that the thing was done to meet a particular contingency, they cannot go wrong in the matter.

(*Major General Scott.*) What are the anticipations of the companies? You represent the companies, what are your anticipations with regard to the conditions on which new capital would be raised in the future, and the appropriation of the gross profits of that capital.

(*Mr. Pember.*) If you ask me point blank, I will tell you exactly—I have not the slightest hesitation in saying so—that the moment I am told I am not going to be bought, and I go, we will say, for a Staines scheme to bring the supply from the Thames up to 300 million gallons, I get my preamble, and if anybody were to ask that there should be a Chamberlain's fund attached to that, while I have got a very poor professional reputation to lose, I would stake whatever it

is worth, and it is worth something to me. I would stake the whole of it upon the fact that Parliament would not do it. I should have to raise the money in the ordinary way, by loan in all human probability, and with the auction clauses, and there is an end.

(*Chairman.*) By loan, and not by shares.

(*Mr. Pember.*) I think not; on that point I think I have dwelt. I have said I think the era of share-raised capital is over, that is my impression. It is over, and the only way in which I think Parliament would allow it to be raised is by loan, and probably with the auction clauses and the premium clauses. The only point upon it that touches me at all is the one I have dealt with, namely, whether or not that will increase the percentage at which the companies can raise capital. I have already said that I do not think it will, my reason being that what the investing public goes for is a margin, and they will take evidence of margin, for that is the only value to them of there being a share capital behind him, they will take the evidence of margin from what the facts are, of which the presence of a share capital behind them is only one sort of evidence, they will have others. The market will find that out.

(*Major-General Scott.*) The gross profits on the whole of the new capital will go in the first place to pay the interest on the loan.

(*Mr. Pember.*) Yes.

(*Major-General Scott.*) And next to aid in the dividends of the companies up to the 10 per cent. limit.

(*Mr. Pember.*) And the back dividends.

(*Major-General Scott.*) Next the back dividends, and lastly—

(*Mr. Pember.*) The reduction of rate.

(*Major-General Scott.*) The reduction of rate.

(*Mr. Pember.*) That is it.

(*Mr. De Bock Porter.*) Have you any suggestion to make with reference to a limitation of dividend of the New River Company to enable that to be dealt with on the same lines as the other companies?

(*Mr. Pember.*) No, I have not, and I do not see how you can deal with the New River Company without committing a grievous injustice. There it is. My learned friend I daresay would like, perhaps, to address himself to that point, as he more particularly represents the New River Company.

(*Mr. Pope.*) I would rather you dealt with it now.

(*Mr. Pember.*) Then I should say, No; I do not think you can touch it. I will tell you why I do not think you can touch it. It seems to me perfectly clear. You must treat the New River Company as you would treat all the other seven companies; but, of course, it is rather more the case of the limited dividend companies that I have been dealing with hitherto.

I say you must acknowledge all their legal rights, whatever they may be, and those legal rights will form the basis of value. And here comes the danger, I think, of all those interesting topics; they may lead us aside from what is really the reference to you. The reference to you is what the financial results of purchase will be. For instance, you have not got to consider whether or not it is a right thing that Parliament some day should limit the dividends of the New River Company. You have not got to consider that. That is a question of policy and justice, which has got nothing whatever to do with the reference to you. Parliament might take one view of the justice of that; you might take another. But, fortunately, you have not got to consider that. All that you have got to do is to take things as they are, and see what the result of purchase would be financially. That is the main thing.

(*Chairman.*) Among the things that are, is the 10 years' legislation with regard to the sinking fund.

(*Mr. Pember.*) That I have done with. I am not going to say anything more about it. If I have not made my view clear, I should not make it clearer, I am certain, by going on with it. But now I am asked a question by your honourable colleague about the New River Company. I say for the purposes of this inquiry we ought not to bother our heads about that at all, because you must take the New River Company as you find it. If it be a fact that legally they are entitled to divide 100 per cent., if they can, that is part of the law of the case, and that fact must be taken

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into consideration by any arbitrator who wants to do justice in appraising the value of the New River.

(Mr. De Bock Porter.) As regards the New River Company, the sinking fund, if left as it is, would operate very prejudicially against the New River Company, because it would keep down their income dividend to a very moderate amount for years and years to come.

(Mr. Pember.) That only shows what the gross injustice of what you are good enough to call a sinking fund would be if it went on for ever. I say it was never intended to go on for ever, and the New River is one of the companies against which it would work more unjustly than any of the others.

(Mr. De Bock Porter.) You are arguing that we might leave the other companies alone and let them gradually pay their 10 per cent. and then the receipts go in relief of rates; but that will not afford relief against this large company.

(Mr. Pember.) No.

(Mr. De Bock Porter.) Are you suggesting any limit?

(Mr. Pember.) No, why should I? I am not suggesting that you should let the companies alone, if you will pardon me. All I am suggesting is, what the company's position is with which you will have to deal when you consider the financial aspects of purchase. I am not asking you to give what some of these gentlemen have called a new lease of life to any company, I say I exist for ever. All I ask you to consider is what the position of the various companies is with which an arbitrator will have to deal in settling the price, and I have shown, I think abundantly, if he does settle a price, having regard to any thing like justice, that, so far from their being any profit, there can be none at all; and more than that, I have shown that the property in the hands of the London County Council, at all events, would depreciate to such an enormous extent that they would lose 200,000*l.* or 300,000*l.* a year by the purchase—that they would buy an income of 980,000*l.*, and they would have an income of 600,000*l.* or 700,000*l.* in consequence of their own acts.

(Mr. De Bock Porter.) You have argued, have you not, that leaving them alone would be the best thing for the consumers as regards the companies with limited dividends.

(Mr. Pember.) I am not even bound to say that. As a matter of fact I do think so. But that is not part of the reference to you. It is not part of the reference to you to say whether purchase is advisable from the point of view of policy. I wish to heaven it had been as I started by saying. I should have made the apology for the Water Companies a vast deal better and more completely than I have done now. But that is not referred to you. You are not asked to say whether purchase is advisable in the ordinary way. You are only asked to say what the financial results of purchase would be. I say those financial results of purchase would be disastrous, and I am quite willing to admit that one of the elements in the disaster would be the very high price they would have to give for the New River Company. Do not you see? You are not asked to consider questions of abstract utility or anything of the kind. That is quite outside your province, if you do not mind my saying so, in my poor judgment—quite outside your province. I should have been very glad if you had been asked to consider the advisability or non-advisability of purchase, which is the thing I have been burning as a question to deal with for the last ten years—because I have taken more interest in this water question than anything else I have had to do with. I have been burning to have my fling on the subject, but I have not been allowed, I never am allowed, and I am not allowed now, and I have not done it. All I have done is to show that the financial element is clean one way—and what the honourable member says heightens my belief, namely, that they would have to give such an enormous price for the New River Company, that, for that amongst other reasons, purchase must be disastrous.

(Major-General Scott.) Do you not consider that our reference would cover the consideration of the chance that Parliament, when you came to them for these large sums of money, would revise the conditions under which you should employ that capital.

(Mr. Pember.) No, I do not. Indeed, I do not. To be quite candid, I think it would be a most mischievous thing if such a reference was entered into, and if I were not able to make that statement positively, all I

can say is that all my long argument on the first day about the legal position of these companies and the good faith of Parliament and the national word would have been simply thrown away and it would have been a sham, and therefore as I am not inclined to admit that I ever do advance shams when I do things carefully, I insist that I do not think that is a part of the reference to you, and ought not to be, and it ought not to be a reference to any arbitrator either.

If Parliament makes up its mind that it is going to bring about a revolution, all I can say is, it must compensate those against whose interests it is going to revolve, and compensate them on the basis of what their interests really were, and not compensate them upon the basis of what their interest might be if they had been very largely cut down, which they have not been. That is simply to say, we will consider your just rights in the light of an injustice supposed to be committed against you. Before I go to the estimates, just let me say this to bear out what I say. I say that on a certain day in the discussion in 1886, before Lord Claud Hamilton, my learned friend, Mr. Pope, said, "Your Lordship said that you desire to secure the public, in view of the ultimate purchase of the undertakings, against increase of value arising out of the power sought from this Committee, but that you did not desire to put in a condition which would cripple or be injurious to the existing interest as it stands without further interference." He said, "That is so, sir." I think the Commission might be perfectly sure that I would not intentionally mislead them, and I am perfectly certain that my intimacy with the whole of this subject is quite sufficient to prevent my being able to do it by inadvertence; these Chamberlain's funds were always established on the basis that purchase was in the air, and was going to be speedily carried out.

Now at last, then, I come back to what is practically the last matter I have to deal with, and I should like to get through it as speedily as I can (I began it yesterday), and that is the comparison of the estimates put forward by Sir Alexander Binnie and by our own engineers, first of all for the Thames, and then for Wales. I got rid of certain of the estimates directly, though indirectly I may have to refer to them, which went merely for the providing the 185½ million gallons, which have been already sanctioned, and I said really that the estimates that we have got to look to, so far as the Thames went, up to the point of the Balfour Commission, are the Estimate D. and Estimate G of Sir Alexander Binnie, both of which provided for the supply of 300 million gallons on the footing of the 200 million gallons minimum over Teddington Weir, and which had to be contrasted with Mr. Middleton's Estimate 9 and his Estimate 10. Now, in order that we may have these before us, because they are the principal texts, so to speak, upon what I have got to say for the Thames, let me tell you that Sir Alexander Binnie's estimate D was handed in at question 9321 and estimate G at question 23,280, but I hope for your Lordship's convenience that you happen to have a loose copy of the Estimate G.

(Chairman.) It was handed in at question 23,280, I think.

(Mr. Pember.) Yes, it was. On the other hand Mr. Middleton's Estimates 9 and 10 were handed in at questions 17,606 and 17,652. Now, therefore, let us compare to start with Estimate D. and Estimate H. You will find that Sir Alexander Binnie's Estimate D. is 15,589,900*l.*, and as it is copied into Mr. Middleton's estimate 9, I need not bother myself with looking at Sir Alexander Binnie's own estimate, but I can take Mr. Middleton's, because that is side by side with his Estimate 9., and that will be convenient for us all. Now the first thing I notice is that Sir Alexander Binnie's total is 15,589,000*l.* I leave out the odd hundreds, and Mr. Middleton's is 8,410,000*l.*, so that one is nearly double the other. Now, fortunately, we know exactly how this difference arises, and let us see whose views in the matter seem to be the more justifiable. Now the first main source of difference is that of gross storage. If you will look you will see Sir Alexander Binnie's gross storage is 28,000 millions. Mr. Middleton's is 21,725 millions, a very considerable difference. The nett storage of course is pretty much alike, Sir Alexander's is 20,000 millions, and Mr. Middleton's is 19,750 millions. Of course no two engineers could differ materially on a point of that sort. If you want to serve out two half pint breakfast cups of tea from a pot, it is obvious that the nett holding of your

pot must be at least a pint, and the only question as to what the size ought to be as between two persons is how much is necessary to hold the tea leaves, and that is the whole difference practically between Sir Alexander Binnie and Mr. Middleton. Sir Alexander's difference between gross and nett, you see, is as 28 is to 20, Mr. Middleton's is, speaking roughly, as 21 is to 19. The one knocks off 8,000 from 29,000, which is, as far as my arithmetic carries me, 28 per cent., and the other knocks off 1,900 from 21,000, which is practically knocking off a little less than 10 per cent. Now Sir Alexander Binnie's 8,000, which he thinks it necessary to knock off, is divided into two symmetrical items; I need not trouble your Lordship to turn to it, but I give you the reference. He says 4,000 millions are for cleansing, that is for having the reservoir out of use, and 4,000 millions for dirty water, that is to say, water at a point below which you cannot draw off your reservoir, and he gave you those figures at question 9,562. By-the-by, the second 4,000 is for dirty water and for evaporation. This last matter of evaporation I may get rid of at once by telling you that Mr. Hawksley says that from experiments that he and his father made it is abundantly clear that in a reservoir of this size the rainfall and the evaporation may be about written off one against the other, and so I do not bother myself about evaporation any more. Therefore I take it that those two matters—the 4,000 millions for cleansing and the 4,000 millions for what I call dirty water—are matters which depend pretty much upon the same question, and that is, what is the amount of solids in suspension. Now Sir Alexander Binnie himself, at Question 9572, admits that it depends upon that. It may be as well, perhaps, that I should first read you that question and answer because it is very short. I say to him: "I think I may take it, without fear of contradiction, that that depends entirely upon the amount of matter which is in suspension in the water," and then he says: "Of course it depends upon the amount of impurity that has settled in the water," and then of course I show him that that is the same thing. Now then two questions below I ask him this: "May I venture to ask you what is the impurity—the matter in suspension—that should be taken per gallon of water," and he says, and mark that if you please, because it is very important, "I have not gone into it in that particular way," and in the very next question he says he has not. I said "You have not" with some astonishment, because it seemed to me that that was the first thing to learn, he says: "I know that it will exceed seven or eight grains certainly per gallon," he says, "I know that." Now does he? Sir William Crookes tells you that he does know to the contrary by numberless experiments, and that Sir Edward Frankland knows to the contrary in the same way, and that poor Dr. Tidy, who is now dead, knew to the contrary too. He says in answer to Question 21,685, that they have never found more than one grain and a half.

(Sir John Dorington.) Who is that, Sir Edward Frankland or Professor Dewar?

(Mr. Pember.) That is Sir William Crookes, and it is so important, because it lies at the bottom of all I am saying and going to say, that it is worth while to turn to it. At Question 21,685 he is asked, "What I was rather anxious to ascertain from you was if I could see the quantity of solid matter which you have found in samples of water taken from the Thames in different states of flood." He says, "We have taken a few: Sir Edward Frankland has taken a great many, and Dr. Tidy has taken a great many." Then notice this, your Lordship. "We have never got more than 1½ grains per gallon.—(Q.) You have never got more than that?"

(A.) We have never got more than that in the worst flood." Then I interjected, as I am perhaps alone to do, "Neither you, nor Tidy, nor Frankland, and he says, "No." So that Sir Alexander Binnie, if he had been at the trouble of finding out this mental truth, or if he thought he had found it out, would have been five and a half times wrong, that is all. He puts the amount of impurity five and a half times too high, indeed I am justified in saying it is a great deal more than that, because Professor Crookes says, "We have never got in the worst flood more than one and a half"; and five and a half times would be right if that had been the average, but it was not, it was the maximum.

95. His only real basis is what he gives you at question 9581, and that is that in a general way you allow one grain in reservoirs. As a matter of fact he has taken

off a great deal more than the one-eighth, but let that pass.

He also admits in answer to Question 9579, and this is very funny, that it might require a great deal more than 7 or 8 grains per gallon to warrant his deduction of 4,000 million gallons for that purpose. Here is the question which I put: "It may turn out that if I calculate the amount of grains per gallon that would be necessary to warrant so much being taken off for impurity, I might find that the amount requisite would be much more than 7 or 8 grains," and he said, "you might"; so that you see he has got a very light heart about this which lies at the basis of all his calculations. Now I do not think he can have fully considered the matter and I will tell you why. On the very same page he says in answer to Question 9581, "two grains of suspended matter per gallon would represent," what? "a very good filtered water." You have got men like Dr. Tidy, Sir Edward Frankland and Sir William Crookes combining to say that in the unfiltered water they have never found more than 1½ grains at the worst flood. What can a man mean except to show that he does not know anything about it when he says that 2 grains per gallon is very good filtered water. Then curiously enough in answer to Question 9589, when I said, "but still, I put it to you again because I need not add that this is a subject on which we will call evidence, that provided that mud, whatever its quality, be such in amount that in 12 years it would only amount to something like half-an-inch at the bottom of a reservoir 35 feet deep, would it be necessary to clean that reservoir out every year for the purpose of being able to make the water potable afterwards in our filter beds?" he says, "not for the purpose of making the water potable in the filter beds, but for the purpose of preventing a rush of microbial growth." You see he admits that it would not be necessary to clean out the reservoirs every year, to make the water potable. I should have thought that the thing to look at is what the condition of the water is after filtration, whether it is potable or not; and as to preventing microbial growth, that growth does not necessarily mean anything harmful, because if you recollect Sir Edward Frankland told you he had never found a pathogenic microbe in the London water filter. I asked him the question myself, and I felt it was perhaps a little audacious, and that I might get an answer which I did not like. I am also told that he said, or unfiltered either. It is possible, but at all events, it is enough for me that he never has found a pathogenic germ in the filtered water of London. What more do you want? If the germs are not pathogenic, they are harmless, as we have been told by the other chemists. But surely the thing to look at is what is the condition of the water after being filtered. Is it potable? Sir Alexander said it is not necessary for the purpose of making the water potable that I should reserve what I do reserve for cleaning the reservoirs; then I said, you do not want a reserve for that purpose at all. Now contrast with this evidence of his, so slipshod, and showing such a blithe insouciance about the matter, Mr. Middleton's carefully made description of the silt, and its quantity and behaviour and the resulting bottom film, for film it is, which he gave you. I am not going to read it to you, but I just call your attention to it. It begins with a series of questions asked by the gallant general beginning with Question 14,359, and then he goes carefully through, as I say, the condition of the silt, the amount of the silt, how it falls to the bottom, its general behaviour, and the mere film that is found at last. The evidence of course would take too long to read, but it is contained between Question 14,359 and Question 14,374 inclusive. I further gave Sir Alexander Binnie the instance of the West Middlesex reservoir that had been in continuous use for 18 years, and of course I should not have done it, if I did not know that the instance was going to be proved. I put it to him that it was then cleaned and that 6 inches of mud was found at the bottom after 18 years, and the water had been good all the time with no complaint made about it, and I also put to him that that reservoir was further down the river than the Staines reservoir would be and therefore would have a great deal more chance of having to take in initial impurities. Mr. Middleton subsequently gave you four instances of reservoirs on the Thames that had been cleaned after 19 years, after 18 years, after 12 years, and after 23 years respectively, and mind you they were no guide for ours, for they were small reservoirs frequently filled and emptied, whereas ours would not be filled certainly, on an average, once a year

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because of course they would only be called into requisition as they were wanted in the dry weather. Similarly Mr. Hervey described that 6 acre reservoir for West Middlesex, which was cleaned out after 30 years, in which there were 7 inches of mud found at the bottom, and he said how the reservoir was going constantly through the process of filling and refilling all the time. I should be sorry to be supposed to be careless about the evidence, but I want to get through as quickly as I can, and you will find the reference to it at question 26,185 in Mr. Hervey's evidence. Now, lastly, there comes Mr. Hack's instance, and I am very desirous that Mr. Hack's instance should not be misconstrued. That was the instance of a reservoir which was one of four, and he said, if you recollect, "I do not draw it down to nearer than 4 feet of the bottom."

(Chairman.) Yes, that was so.

(Mr. Pember.) Of course I knew there was something peculiar about that reservoir, and therefore I was very anxious that his answer should not be misconstrued, and that it should not tell therefore, as it were, against the evidence I had been giving substantively in the meantime. What was that reservoir? It was one of four, and it was the maid-of-all-work for these four reservoirs. It did all the dirty work. It was the slut, the slattern; and it was filled and refilled constantly during the year, and it was the first of the four reservoirs, so that it got all the subsidence of the worst water. Mr. Hack told me at question 29,214 that it was filled and refilled between 30 and 40 times in the year. Now I was anxious, as I say, that the evidence should compare that with our great Thames reservoirs, which as I say will be filled to supply the casual wants of abnormal years in a great measure, and which certainly would not be filled on an average more than once a year, and Mr. Middleton, I do not mind saying, has told me since, that although he said once a year they would not be as a matter of fact filled anything like once a year. But of course with Sir George Bruce sitting at your right hand I have no doubt that that is a statement on my part which you can easily test. Now Mr. Hunter confirms the allowance of 10 per cent. not be misconstrued, and you could not for a moment for evaporation and bottom water in answer to question 19,948 and Mr. Hawksley does the same thing in answer to question 20,778—and recollect that Mr. Hawksley's experience as lieutenant to his father, the late Mr. Thomas Hawksley, must have been very large indeed. Now there is another thing you must bear in mind which is no doubt A. B. C. to an engineer, but is not A. B. C. to persons like myself at all events, and that is that these Thames reservoirs of ours are very different from the ordinary impounding reservoir which is made as you know by raising a very high dam at one end, and letting the thing slowly tail off to nothing at the further end, and slowly tail off to nothing on sloping sides. There of course the process is a deposit of silt all over the bottom of the reservoir, and all over the sides of the reservoir, because the bottom of the reservoir in such a case as that is bottom and sides both in one, whereas with us, with our reservoirs constructed with practically straight sides, the silt goes right away down to the bottom, and does not affect the whole of the sides of the reservoir up to the top water level, as it does in the case of the ordinary impounding reservoir. Our first charge then against Sir Alexander Binnie is that he has largely exaggerated the gross storage. Now taking the difference of 28,000 million gallons as against the 21,725 million gallons to be 6,275 million gallons or in the other year in estimate 10, which is 27,134 million gallons against 20,000 millions, but taking the difference to be 6,275 million gallons—and it is so—it is a mere question of arithmetic, at Sir Alexander Binnie's own chosen price of 350*l.* per million gallons, that is at once a difference between the two estimates of 2,196,250*l.*, and that on the first item namely the amount of storage required. If we are right, and it is the contention of all our engineers that we are, he has taken 28,000 millions against our 21,725 millions. I say the difference between those is 6,275 millions. Now take it at Sir Alexander Binnie's own price of 350*l.* for the million gallons, that is a difference at once of 2,196,250*l.*

Now for the next item of difference. The next great item of difference is the reservoir cost per million gallons. His, as you see, if you look at that table which is side by side with our estimate 9, is 350*l.* per million gallons, and ours is 212*l.* That is a difference of 138*l.* per million gallons. It is very simple. That works out at a sum of 2,878,574*l.* That is the second

main difference. Adding that to the previous 2,196,250*l.*, which is the difference in the reservoir space, you get the full difference between our figures and his, which is, 5,074,792*l.* I have already analysed and explained the first of the two constituents of difference, namely, the gross storage, and now to deal with the price per million gallons. It is necessary in order completely to understand this question to go back to the estimates for the 185½ million gallons common to both the schemes. You will see that in his estimate for the 185½ million gallons, Sir Alexander Binnie estimates the cost of the reservoirs for that amount at 380*l.* per million gallons. I need not take you back to it. You will remember that, I daresay.

(Chairman.) I remember it perfectly.

(Mr. Pember.) That was done in a very simple and rough way, by dividing the million and a quarter of the Staines scheme by the 3,284 million gallons which was the cost of the authorised Staines reservoirs, that is to say, dividing it by its contents. That he says he did at question 14,977. But, mind you, that 1½ million contained many things besides mere reservoir construction, such as would be all that our further instalments would necessitate, as Mr. Middleton pointed out later on in his evidence, and if you want the reference to that it is at question 14,379. But now, just to show what the things were that were included in that 380*l.* per million gallons which is what the sum works out at, there is first of all the item of the aqueduct. Our Staines aqueduct, as Mr. Middleton told you at question 14,991, is capable of carrying 90 million gallons a day, and in Sir Alexander Binnie's estimate, of course, it only figures at the 35 million gallons, for that is what he told you at question 14,985. He said for 35 million gallons a day they are obliged to have a storage of 3,284 million gallons. But, as a matter of fact, it is not 35 million gallons a day that that aqueduct of ours can supply, but 90 million gallons a day, and even that is not all, because, forgive me for just saying what I am rather afraid is not on the evidence, but which still is a matter of fact, and I am quite sure you will pardon me for adding it, the first two miles of that aqueduct from the pumping station, that is to say, on the Thames, will carry 150 gallons a day.

(Sir John Dorington.) That is to the reservoirs?

(Mr. Pember.) To the reservoirs, that two miles, because that is in excess of the 100 million gallons which is the maximum that under the Staines Act we are allowed to take out of the River Thames in one day. Now, the last seven miles from the reservoir on to the ordinary main carry the 90 million gallons of which I spoke, and both those figures must be compared, you see, carefully, before you consider what the real cost per million gallons for capacity of that Staines reservoir scheme is, and what the cost therefore per million gallons was—you must compare that and contrast it with the 100 million gallons to which we were limited in taking water out of the Thames and the 35 million gallons—liable to be made 45 in emergency—to which we were limited when we came before Parliament in each case. I therefore put it in this way. Sir Alexander Binnie's evidence only figures with regard to the seven miles of our aqueduct for less than half the amount which it really could carry and with regard to the two miles from the pumping station to the reservoir itself he is 50 per cent. out. Put it in this way. If we had known that Parliament was going to limit us to 35 million gallons a day for the ordinary supply from the Staines reservoir, we should have estimated for an aqueduct less than half of the actual size and cost. Then besides that also if we had thought that Parliament was going to limit us to 100 million gallons a day maximum pumping from the Thames, we should not have put an aqueduct in from the Thames to the reservoir which would have carried 150 millions, but we of course could not see that till we got before Parliament. If you wanted, therefore, to take the costs of future reservoirs, and to get those by comparison with what the Staines reservoir cost per million gallons you ought to take not what the Staines is limited by Parliament to do, but what the Staines could do if there were no parliamentary limitations put upon it. That seems to me to be absolutely clear. That is the great vice underlying Sir Alexander Binnie's 380*l.* and 350*l.* per million gallons.

Another great saving, and a very considerable one, is in the absence of what are called feathers or cross banks. We have got that in the Staines Scheme as it is now authorised for that one set of reservoirs, but we

shall not have it in the others, and that is what the engineers tell you is a very great saving in cost indeed. Beside that, we also bought enough land at the time we were buying it—I think with a very proper prudence—for four aqueducts instead of one, and we were told that a very great saving in consequence will ultimately be caused by the buying of that land, although a very considerable expense at the moment was put upon the existing Staines scheme by that.

(*Chairman.*) That is new to me, Mr. Pember, at present. Is that in evidence?

(*Mr. Pember.*) I will tell you where to find it. It is question 19,430.

(*Chairman.*) More land bought for Staines you say than you wanted.

(*Mr. Pember.*) Yes, for the aqueduct. There it is—I knew I could not make such a mistake as that. It is at question 19,430. He is asked "Can you give any explanation of this as you go on"—that is of the difference in price—" (A.) I have given the explanation to you already, my Lord, that these are figures taken from our own estimates, and that the reason of the difference first of all is, that in future reservoirs, we shall take away the mid-feather bank which means a cost of a large amount, that our aqueducts are made for a very much larger capacity than the amount we are allowed to withdraw"—which is what I have been saying—"and that the land is obtained for four aqueducts instead of one. All these matters, of course, reduce the cost of future reservoirs very considerably." Then there is also the present pumping machinery because we did not know we were going to be limited to 100 million gallons a day intake, nor did we know we were going to be limited to the 35 million gallons a day distribution, and as he tells you at question 19,441, our present pumping machinery is consequently largely in excess; and as a matter of fact it is 50 per cent. in excess of what Parliament will allow us to do. So that there is another important matter, and here I am afraid I cannot give you a reference to the estimate because this is also a little fact, as I said about the first two miles of the aqueduct, which I gained from subsequent conversation with the engineers, but I trust you will pardon me, and think I have no bad motive in telling you. The pumping mains which are of steel are six feet four inches, and again 50 per cent in excess of present requirements, and they were very expensive. But, to cut the whole thing short, both Mr. Hunter and Mr. Middleton say that for mere construction of reservoirs—I mean, by mere construction of reservoirs, reservoirs without any of the adjuncts such as we have been talking about—that they start their estimates with the actual contract figure for the Staines reservoir, which, of course, is done by separate contract as apart from the aqueducts and all that kind of thing, and those contracts, they told you distinctly, worked out at 155*l.* per million gallons. Now when they come to apply this 155*l.* per million gallons to the cost of the works they are going to do under these estimates for the purpose of bringing the supply up to 300 million gallons they add, of course, to the 155*l.* again, from their own knowledge of the actual cost because—they know the cost of these things as well as they know the cost of the construction of the reservoirs—various other items for aqueducts, for mains, for pumping machinery, and so forth, all those that I have been explaining to you with regard to the other part of the Staines scheme. Now let us take an example to show in the result of their doing it. Let us turn to Mr. Middleton's estimate 1, put in at question 17,465. Those are the conditions of 1893. You will find that Mr. Middleton there takes the total capacity of 4,373 million gallons at 300*l.* per million gallons, showing you that he puts a great deal more on the top of that 155*l.* per million gallons for mere reservoir construction. All the difference between 155*l.* and 300*l.*, namely, 145*l.* per million gallons of course he tells you—and it is obvious—is added, because he has taken into consideration the cost of the aqueducts, the cost of pumping machinery, and other matters which are therein included.

Now at this point I think it is worth while just to say that Mr. Middleton was asked how he accounted for his estimates in the main being below Messrs. Hunter's and Fraser's. He was asked that at question 19,442 and there he gives an answer which I should like you to bear in mind. The question is asked by Mr. Balfour Browne. I will not ask you to turn to it, but his answer, boiled down, is this: He says at once,

"Messrs. Hunter and Fraser went in for reservoirs which differed essentially in their construction from what Mr. Hunter and I are going to make at Staines now. They went in for deeply-cut reservoirs to be supplied by gravitation; but when we came to look into the thing we found it was so wasteful a plan that it absolutely involved a loss of 400,000*l.* on the present Staines scheme." Now, that 400,000*l.* would work out, and I have just done the arithmetic, at something like 114*l.* per million gallons of absolute loss. But to recur to Mr. Middleton's own estimates I say that his estimate 1 for 185½ million gallons gave 300*l.* per million gallons. For the subsequent quantities of course it is less. You will notice that on Estimate 1 it is 300*l.* as I told you, and if you turn to Estimate 2, which shows the conditions of 1898, you will find that it is less. He gives it to you there, not at 300*l.* but at 204*l.*; and now I will tell you why, because, of course, I am bound to defend his estimates at all points.

That puzzled some of his hearers, and I confess it puzzled me, but kindly note the difference between estimate 1 and estimate 2. The one was handed in at question 17,465 and the other at question 17,549. The great difference there, if you will kindly look at it, is in storage. The storage has jumped from 5,239 million gallons, which is the storage in estimate 1 under the conditions of 1893, to 13,719 million gallons, which are the conditions of 1898 in Estimate 2. But no new works such as pumping machinery or aqueducts are added to that Estimate 2. The addition is entirely that of the construction of reservoirs. All you have therefore to do to make 1 into 2, and to fit your conditions to the conditions of 1898 instead of 1893 is to add that 8,480 million gallons of storage, and you will find if you multiply that by the 155*l.* of the Staines reservoir contract price, it works out at something over 1,314,000*l.* Now, if you add that 1,314,000*l.* to the reservoir cost in Estimate 1 you will find that it comes to the reservoir cost in Estimate 2 as nearly as possible, the reservoir cost in 2 being 2,600,000*l.*, and the reservoir cost in 1 being 1,311,000*l.*; and so if you add 1,314,000*l.* to 1,311,000*l.* you get it as nearly as possible—in fact, I suppose it is the same figure of 2,625,000*l.* of storage in Estimate 2. Now that shows, you see, that you have got an abundant explanation of why it is in his various estimates the cost per million gallons of water to be obtained differs, why it is sometimes 300*l.*, sometimes 204*l.*, and presently you will find when I come to Estimate 9 a third figure which is 212*l.*, and I will explain that in a moment. I proceed to do that now.

If you will kindly turn to the figures for the larger supply, namely, 9 and 10 of Mr. Middleton's Tables, which you will find were handed in at questions 17,606 and 17,652, you will find, as I say, that you have got there the cost as 212*l.* per million gallons. That was puzzle number two. I did not see it myself at first, but Mr. Middleton explained it to me. Why, somebody asked, I think, should it be more than the 204*l.* per million gallons of Estimate 2? Mr. Middleton's answer is complete in the matter. It is because the storage of Estimate 2, in consequence of the conditions of 1898, had to be made abnormally large in proportion to its pumping machinery, and as I have already told you that difference, which is 8,480 million gallons, caused by the difference of conditions between 1893 and 1898, made a difference of 1,300,000*l.*, at 155*l.* per million gallons. Therefore, the storage of 185½ million gallons in relation to the pumping of 1893, bears one particular relation to the storage for the same amount of million gallons under the conditions of 1898; and that relation is represented by the difference between 300*l.* per million gallons and 204*l.*; but when you go to the 300 million gallons in Estimate 9, the factors of relation between storage and pumping and machinery alter once more, because the pumping machinery, the mains, and the aqueducts for Estimate 9, have to be on a larger scale than they had to be for Estimate 1, although they have not to be on a larger scale for Estimate 2, because you are going now to provide for 300 million gallons a day as part of your general water supply. Therefore, of course, you expect to find that you must make a considerable addition to the 155*l.* per million gallons for mere reservoir cost. Still their increase is not proportionately as great as the increase in the amount of storage, and I will tell you why; because, as has been told you by two or three engineers, and my dull brain has never taken in the reason why, but I am bound to accept it, because as they all admit and assume

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it from Sir Alexander Binnie downwards, the amount of storage increases in a very high ratio of its own, the higher the amount which you wish to supply. Why I do not know; I have had curves and diagrams and heaven knows what put before me, but I cannot understand it, and it is no use my trying to, but still I take it to be the fact that it is so. Therefore, when you come to Estimate 9 you find that the proportion of storage, which is the cheapest thing, is much larger in proportion to the pumping machinery and all the rest of it in Estimate 9 than it is in Estimate 1. It is larger in Estimate 2 than it is in Estimate 1. Therefore you get a difference between Estimate 2 and Estimate 9 in favour of Estimate 9 and a difference between Estimate 1 and Estimate 9 in favour of Estimate 9 again, the great increase, therefore, is in the work that is done at 155 $\frac{1}{2}$ per million gallons, and that pulls the 300 $\frac{1}{2}$ per million gallons of the lower amount, namely, the 185 $\frac{1}{2}$ million gallons in Estimate 1 down to the 212 million gallons of Estimate 9. If you care to work out the figures, you will find that the difference of storage between Estimate 1 and Estimate 9 is 16,486 millions, and the estimated difference of cost similarly for construction work is 3,110,208 $\frac{1}{2}$, and if you divide that 3,110,208 $\frac{1}{2}$ by 16,486 millions of the difference of storage, you get as nearly as possible 190 $\frac{1}{2}$ per million gallons for the new works. Now, what does that show? That shows that there is 35 $\frac{1}{2}$ per million gallons in the calculation with the 190 $\frac{1}{2}$, in addition to the 155 $\frac{1}{2}$ for more reservoir work. And that 35 $\frac{1}{2}$ per million gallons on the whole 16,486 millions of the difference of storage, gives a total (I have multiplied the figure) of 577,016 $\frac{1}{2}$, showing that in the estimate there is that large amount of over half a million allowed for the items mentioned by Mr. Middleton, the aqueducts, pumping machinery, and all the rest of it, and it is not the same mere addition that it was in Estimate 2 as against Estimate 1 of the storage capacity alone. When you come to compare Estimate 9 with Estimate 10, Estimate 10 being, of course, Estimate 9 turned into the conditions of the year 1898, then you do find the same sort of relation between Estimate 9 and Estimate 10 that you find between Estimate 1 and Estimate 2, at least you ought to.

(Sir John Dorington.) Where is Estimate 10?

(Mr. Pember.) It was handed in at question 17,652. Now, I want just to test Mr. Middleton, and see whether or not he can be caught out. I know he cannot, but, however, let us see. I say there ought to be something like the same relation between Estimate 9 and Estimate 10 that there was between Estimate 1 and Estimate 2. Let us see if there is. The storage in Estimate 10 is 30,468 million gallons. The storage in Estimate 9, as we have heard before, was 21,725 million gallons, the difference is 8,743 million gallons. Now, the cost of the works in Estimate 10 is 5,778,310 $\frac{1}{2}$; the cost of the works in Estimate 9 is 4,422,108 $\frac{1}{2}$, a difference of 1,356,202 $\frac{1}{2}$. Now, let us see how that works out. Dividing that 1,356,202 $\frac{1}{2}$ by 8,743, you get 155 $\frac{1}{2}$ per million gallons. Now, I say that shows that unless Mr. Middleton has been a good deal more cunning and wicked than I think it is possible for the ordinary engineer to be, the concordances between the estimates of 1 and 2 and 9 and 10 mutually confirm each other, and show that they are composed on a perfectly intelligible and perfectly harmonious basis, and I think that is a great feather in Mr. Middleton's cap.

Now, so far, my Lord, I have dealt with the two great items of difference between Sir Alexander Binnie and Mr. Middleton, namely, reservoir space and cost per million gallons. They represent together a sum of 5,074,792 $\frac{1}{2}$ out of a total difference between Sir Alexander Binnie's estimate for the same amount and Mr. Middleton's. Then just let me tell you what the total difference was between the 15,589,000 $\frac{1}{2}$ of Sir Alexander Binnie, leaving out the odd figures, and the 8,410,264 $\frac{1}{2}$ of Mr. Middleton, which was 7,179,000 $\frac{1}{2}$, as I told you. These two first items figure for 5,074,000 $\frac{1}{2}$. Now I have got to find out where the remaining two millions of difference comes in, because that is what there is as nearly as possible between five millions and seven millions. I have got to find where that two millions of difference comes in. It is easily accounted for, and I hope with perfect satisfaction for the Thames scheme. Just let us see what it is. Take pumping to store. I still keep to Sir Alexander Binnie's estimate D, handed in at question 9321. Let us see what he has charged there. I take him first. Sir Alexander Binnie debits the scheme with 227,040 $\frac{1}{2}$ for pumping

to store. Now how does he get that? He tells us that in the year 1893, we should have pumped to store 16,205 million gallons, and he further says that at the end of that year and the beginning of 1894, we should have had to have our reservoirs full, and we should have had to pump for the next year, 1894, 14,068,000 or a total of 30,273 million gallons. That is his total that he puts in his estimate D, actual pumping in 1893, pumping to fill reservoirs in the beginning of 1894, 30,273 millions. Now what does he do? He puts that down at so much per million gallons and capitalises that. Having found out what we should have to pump in 1893 and also pumped it ready for 1894, after the depletion of 1893, the worst year he could have taken at that time recollect, because 1898 was not invented when he gave that evidence (he gave that evidence at the beginning of 1898); what does he do? He takes the worst year known, and then capitalises the pumping in the worst year known, at so much a gallon for 30 years, which is as much as to say that the pumping for every year is to be as arduous as 1893, which we know is not true. That is manifestly wrong, and it is perfectly clear that all the years are not going to be like 1893, the worst year known, according to Sir Alexander Binnie's evidence. As I say, it is better and fairer to do what Mr. Middleton has done in his table, that is, to see what would be actually pumped from year to year so far as you can anticipate the seasons, and that he does in his famous table, to which I will refer you a little later, in which he takes 15 years, if you recollect, and says what, under the conditions of these various years, the pumping would have been, and projects that into the future, and says the next 15 years (of course it is an estimate) will be like the last 15, and although as to every year he may not be right because he may have got a dry year contrasted with a wet year, yet, in the long run, 15 will be properly contrasted, taken in the mass, and that is the right thing to do.

He says, I therefore take it as far as I can see, looking into the future, what will be the actual pumping from year to year, and I then average it, and that is what he does. Now let us see what he brings this out at. He brings out his pumping to store at 101,000 $\frac{1}{2}$ against Sir Alexander Binnie's 227,000 $\frac{1}{2}$. I am bound to say that although he does that in his Estimate 9—and he did it for a reason, which I will say something about a little later on, but which does not convince me—I am bound to say that if you look at the thing finally that is the best way. He does not deal with it in perpetuity. I think the best way would have been that referred to in his note to Estimate 10, in which he says, "if the pumping charges are capitalised at 3 per cent. and reduced to present value, a sum approaching to 2,908,000 $\frac{1}{2}$ must be substituted for the other items, which are 2,173,000 $\frac{1}{2}$." Now, for the moment, however, let us be content with the assertion that Sir Alexander Binnie's method of assuming the worst year for ever is wrong. That is enough for my present purpose at the moment, always remembering this to bear me out in that, that your storage of course is provided to meet all years—the worst amongst the others. Therefore the charge is perpetual and the charge is uniform in all years. So with pumping machinery. It must be ready for all years even the worst, and therefore that is a perpetual charge, and it is uniform in all years, but the use you make of this machinery whether, it is pumping to store or whether it is pumping to supply, differs with the seasons, and that is where the use of Mr. Middleton's Table 7 which makes that comparison of periods of 15 years, of which I have spoken, and which you will find was handed in at question 17,622, comes in so useful. Pumping to store is a comparatively small item.

Now, for pumping to supply Sir Alexander Binnie is clearly wrong again. What he does there is different from what he had done about the storing, but it is equally wrong. Just turn to his estimate and see what he says. Distributing 170 million gallons per day, namely, 62,050 million gallons in the year, I suppose that means, at 2 $\frac{1}{2}$ 10s. per million gallons capitalised at 30 years—just think what that means. That pre-supposes that the whole of the 170 million gallons a day, which is the difference between 300 million gallons, the total supply, and the 130 million gallons, which we take for our own purpose here, as being the present supply—that pre-supposes that the whole of the 170 million gallons is going to begin to be pumped on the first day that the works are ready and is going to be pumped in its entirety for the whole 15 or 16 years over which the period extends. It is more than that, it is 35 years over which the period extends.

Now, as a matter of fact, supposing that our works were ready at any particular period, it would be nil over the 130 million gallons in 1900, and it will rise gradually until it reaches the 300 million gallons in 1935 because if you recollect Estimate 9 tides you over from 1900, when it would be begun, till 1935, when the consumption will have run to the full power of Estimate 9, namely the 300 million gallons from the Thames, which means the 480 million gallons altogether of the Balfour Commission, so that what he ought to do instead of supposing us to pump 170 million gallons in 1900 would be to suppose it to rise gradually as Mr. Middleton has done in his Estimate 9, and to put cost of pumping to supply a quantity increasing from nil to 170 million gallons a day during the 35 years.

That is what he has done. Now there comes a very serious difference between them; Mr. Middleton's amount for that is 2,173,794*l.*, and Sir Alexander's is 4,653,000*l.* That is a difference, and an enormous difference, and we show how these items now work out. These two items figure in Sir Alexander Binnie's estimate for the amounts I have given, for pumping to supply 4,653,000*l.* odd, and pumping to store 227,000*l.*, a total of 4,880,000*l.* Treated in Mr. Middleton's first method, which is the method of Estimate 9, he is debiting it year by year with the cost of pumping till he gets to the end of the period, when his works would be exhausted as the engineers call it. He has got two sums, 2,173,794*l.* and 101,902*l.*; those are the figures I gave you before, and those add up to 2,275,696*l.*, showing a difference of 2,605,094*l.* in favour of Mr. Middleton's estimate as against Sir Alexander Binnie's.

(Major-General Scott.) I do not want to put you out, but should not Mr. Middleton have calculated what would be the capital cost of pumping in perpetuity from 1895 onwards, and then have discounted that back to the present time.

(Mr. Pember.) Yes, and of course I have said myself that personally, if I had been an engineer doing the estimates, that is the way I should have done it; but Mr. Middleton gave me an excellent reason for not doing it, and if you do not mind me giving that reason in its place, I should prefer not to give it now. He gave me what I consider a most excellent reason; but as a matter of fact I will suppose in a minute or two that he had done what you suggest and as indeed he suggested in a note to his Estimate 10. But, may I in the meantime go on? That makes between Mr. Middleton and Sir Alexander Binnie a difference of 2,605,094*l.* in favour of Mr. Middleton; but I quite admit myself that the way—I will not call it the truer method, because I do not think it is fair to Mr. Middleton, knowing what I do of his reasons for doing it—but I quite admit that the method of calculation I should have adopted is to do what Mr. Middleton himself does in his note to Estimate 10. He says if the pumping charges be capitalised at 3 per cent. and reduced to present value—I think that is what you meant, General, was it not?

(Major-General Scott.) I daresay it is.

(Mr. Pember.) That is the method you suggested, and it is upon Estimate 10 in the note. "If the pumping charges be capitalised at 3 per cent. and reduced to present value, a sum approximating to 2,908,671*l.* must be substituted for these two items, making the total of so and so. Now you see therefore, that the difference between his pumping in Estimate 10 would have been, if he had adopted that, a difference as between 2,200,000*l.* or nearly 2,300,000*l.* and 2,908,000*l.* But Estimate 10 was for the conditions of 1898, and he did not do the same sum for the conditions of 1893. In my clumsy way I have, and I find that if he had done the same thing for Estimate 9 which gives the conditions of 1893, that he had done for Estimate 9 which gives the conditions for 1898, inasmuch as he raised Estimate 10 from 2,200,000*l.* to 2,900,000*l.* odd, so he would have raised the two figures of 2,273,000*l.* of Estimate 9 to as nearly as possible 2,900,000*l.*, that is if he had substituted my method if I may venture to call it so, and General Scott's method, if I may venture to suppose his method is the same as mine, if he had substituted that method for the method he did adopt, it would have turned the 2,200,000*l.* into 2,900,000*l.* Now let us see what then would have been the case. Instead of the 2,273,696*l.* of his Estimate 9 for those two items, pumping to supply and pumping to store, he would have had 2,900,000*l.*; and the difference would have been 624,304*l.* Now take the figure of Estimate 9 which is 8,410,264*l.*, the total figure, add 624,304*l.* to that, and he would have

got, if he had done what we, some of us, think he might have done, a total of 9,034,568*l.* to compare finally with Sir Alexander Binnie's 15,589,990*l.*

(Sir John Dorington.) Will you repeat that?

(Mr. Pember.) If he had done what I suggest and what I took Major-General Scott to suggest, and had capitalised it at 30 years' purchase, and reduced that to present time value, he would have had to add to that estimate 624,304*l.*, and that would have brought him up to 9,034,568*l.* instead of his 8,410,000*l.*; just in the same way in fact as his 9,777,029*l.* of Estimate 10 had been raised to 10,399,441*l.* on the Estimates I have just been reading from.

Now, I am quite content with that. Let us say that he had capitalised it, and that was the right thing to do (though I will say presently for him that he has a good deal to say for not doing it), that is what we should finally get to. If we are right we can do for a matter of 9,000,000*l.* odd on the conditions of 1893, and 10,000,000*l.* odd on the conditions of 1898, what Sir Alexander Binnie says cannot be done under 15,589,000*l.*; the whole difference being made up of four different items, one, extra storage for emptied reservoirs, and extra storage for dirty water; and, secondly, the fatuous calculation of 30 years purchase of pumping to store for the very worst year; and then the equally fatuous calculation of pumping to supply the whole 170 million gallons during the whole period during which the works would be slowly coming to their maturity, or their exhaustion—whatever you like to call it. That is pretty clear.

Now, over the rest of the contrasted Thames estimates, I think I may run in two minutes. They only exhibit phases of the same difference, and they would be the subject matter of the same criticism; and really considering the amount of time that I have spent on them, it would be monstrous on my part if now I were to waste much more time over this. But there is only one thing I want to point out. Take Estimate 5 for instance, and Estimate 6. The two tables are simply Estimate 9 minus Estimate 1, and Estimate 10 minus Estimate 2. There is one very curious thing about it: that Estimate 1 plus Estimate 5, that is the 185½ million gallons and Estimate 5, the 114½ million gallons, taken as two separate and independent estimates, ought to equal Estimate 9 you would think. Sir Alexander Binnie's B which is equivalent to our 1, for instance, was 4,705,000*l.* odd. Estimate 9 the difference between his B and his D, is 10,884,000*l.* which brings all his total to the 15,589,000*l.*; and, therefore according to him, the two independent estimates, the one equivalent to our 1, and the one equivalent to our 5 do make up the sum total of his broader estimate which we will call equivalent to our 9. Now, you might notice—I did, and I daresay somebody else will—that Mr. Middleton's own Estimates 1 and 5, that is to say, his estimate for the 185½ million gallons and for the 114½ million gallons taken separately do not equal Estimate 9 when you combine them, and I confess I thought that very funny, and I sent for Mr. Middleton, and said, "There is something wrong here, Mr. Middleton, you are going to supply 300 million gallons, and the cost is so much when you split that into 185½ million gallons and 114½ million gallons in two separate estimates, they do not come to the same thing. There is a very considerable difference between the two. What is it?" "Well, he had to give me an hour's lecture before I understood it, and now I do. The combined storages of 1 and 5 are the same as the storage of 9." That is undoubted. You will find that if you look at Estimate 1. The storage of Estimate 1—I am taking the gross—is 5,239 million gallons. Now let us take the storage of Estimate 5. The storage of 5 is 16,426 million gallons. If you add those two together, you get exactly the storage of Estimate 9, and so if you add the combined pumping to store you get the equivalent of Estimate 9; but the differences in pumping to supply between the estimate for Estimate 1 and Estimate 5 are very considerably below Estimate 9, and I said to him, "Now look here, you have told me that the pumping to supply 185½ million gallons comes to so much, the pumping to supply 114½ million gallons comes to so much; I add them together, and I find that that pumping to supply in your Estimate 1 for the 185½ million gallons was 320,178*l.*, and the pumping to supply in your Estimate 5 for 114 million gallons was 928,668*l.* Of course a great deal of the power of pumping to supply the 185½ million gallons is in the 130 million gallons which we have already treated, and in fact I ought to say an item in Estimate 1 for pumping to supply is for 55½ million gallons, the difference between 185½ millions and 130 millions.

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"Those two items would, I say, work out at 1,248,846l.; but when I come to look at Estimate 9 at the item 'pumping to supply, I find, not 1,248,846l., but I find 2,178,794l., or a difference of 924,000l. How do you account for that?' Well, he says 'the reason is obvious, Estimate 1 follows the operation of its own pumping during the 16 years that Estimate 1 goes on until it is exhausted; Estimate 1 is an independent estimate. It then stops dead at the time of its own exhaustion, that is to say, when the supply has got to the full amount that it is capable of giving. It does not follow the operation of pumping its 55½ million gallons during the period that Estimate 5 covers.' He was asked to make Estimate 5 as a separate estimate by some member of the Commission, and he made it for dealing with 114½ million gallons. Just as Estimate 1 does not deal with the continuation of the pumping of its own amount during the 19 years that follow where Estimate 5 is going, so Estimate 5 does not deal with the continuation of pumping of Estimate 1; it only deals with the cost of its own pumping. Now when you get Estimate 9, Estimate 9 covers both periods from the beginning of Estimate 1, 1900, to the end of Estimate 5, 1935, the whole 35 years, and therefore it has got in it, not only the pumping of Estimate 1 down to what I call the termination of the Estimate 1 period, and the pumping of Estimate 5, during what you may call the Estimate 5 period, but it has got the continuation of the pumping due to the fullest point of the Estimate 1 period continued during the 19 years of Estimate 5. Do you follow that? In fact, it is very seldom I learn anything by a diagram, but it struck my mind almost before it struck Mr. Middleton's that here is a case where a diagram would do you good. [*The diagram was produced.*] For one who sighs over the very name of diagram, as I do, it is odd that I should preach one, but I will try to explain this one. There is Estimate 1 represented by a little triangle getting back towards its butt end—the end of its period. Now here is Estimate 5, another independent estimate of the succeeding period, and which has to do with its own pumping. It gets gradually up to a climax. That bit where the hatched red lines are is the period of continuation of the pumping of Estimate 1, which as, of course, being only for its own 114½ million gallons does not come into that; but when you come to Estimate 9, Estimate 9 is the big triangle and it includes Estimate 1 and Estimate 5, and the pumping of Estimate 1 for the remainder of the period. I think that does make it clear.

(Chairman.) That shows that Mr. Middleton's Estimate 1. was wrong in not capitalising.

(Mr. Pember.) Do not say so, my Lord, till you have heard all.

(Chairman.) Very well.

(Mr. Pember.) However, supposing it had been, you will recollect I have atoned for his fault, by turning his 2,278,000 into 2,900,000, and still he is a matter of five or six millions below Sir Alexander Binnie. But I say strike after you have heard me, but not till then. That is all I need say about them, I think.

Then, as to Estimate 3, that is nothing more than 1 with a difference. It was made at the request of one member of the Commission to include certain works of distribution. I venture to think that is negligible for the reason I gave you when speaking of Estimate 1 itself, namely that the Thames scheme up to 185½ million gallons is common to both the main projects of the supply of London.

Then Estimate 4 in the same way does for Estimate 3, which is Estimate 1 applied to the conditions of 1898; and therefore for the same reason that I may neglect 3, I may neglect 4, for, in fact, it only adapts 3 to the conditions of 1898. Now Estimate 11 does for 9 exactly what 3 did for 1, that is to say it puts in these certain works of distribution. I merely mention them, and say what they do, in order to dismiss them. 12 again does for 11 what 4 did for 3. It applies it to the conditions of 1898. Then Estimates 7 and 8 do the analogous things for Estimates 5 and 6. Estimates 21 and 22 were put in by mistake. They are mere relations of Estimates 5 and 6, and they were probably introduced by some slip of memory.

Now I do not think that there is any more that I need say, and would just simply conclude this review of the rival Thames estimates with the expression of a hope that the Commission will conclude that Mr. Middleton's estimate of some 10 millions of money at

the very outside—9 millions according to the conditions of 1893, and 10 millions according to the conditions of 1898—and not Sir Alexander Binnie's of 15,589,990—is the true figure.

Now I pass to what is practically the last element in this review of estimates. Mr. Middleton after he has done with the Thames scheme proper gives a series of estimates to show what the Thames scheme would cost if made in a series of gradations, to fit the supposed gradations of the Welsh scheme. He does that in his Estimates 13 (a), (b), (c), and (d) handed in at Question 17,790. I ought to say that these estimates which you had from Mr. Middleton were prepared at a time when all that was known of Sir Alexander Binnie's intention was to be gathered from his reports, but of course the comparison is still very instructive, because in the first place Sir Alexander Binnie might recur to it and also because it shows a very important and instructive facet of the main comparison. It is also highly valuable because the gradations, apart from the argument from analogy of the Thirlmere, Vyrnwy and Elan schemes, go so very far to discredit the suspiciously cheap estimates given by Sir Alexander Binnie for his Welsh scheme.

Now, in the first place, Mr. Middleton gives an estimate for 123½ million gallons, which is Estimate 13 (a). You would expect naturally to find that it compared with that original estimate, which he gave long before we got to the comparison between his own estimate and Sir Alexander Binnie's. But I may say that it differs, and it differs in this way—that he has added in these later estimates the 1,155,000l. for the cost of trunk mains for supply, and there are one or two items which he has revised since he gave the original estimate that I mentioned, namely, pumping to store, which was originally 201,000l., and which he now reduces to 86,000l., and pumping to supply which was originally 1,037,000l., but which he makes now 1,033,000l. But, mind you, he adds a good deal for the accumulation for interest, which was originally 1½ millions, and which in this estimate of his he makes 1,850,000l. odd. The total change, therefore, is from 7,922,000l. to 9,290,000l. That is really the total expenditure which, if he did it in that way, would bring up the supply from 185½ million gallons to 309 million gallons—very like the 300 million gallons which we have been talking about, and the cost is very much the same.

The next estimate—Estimate 13 (b), is an amount, quite a small amount, to bring the total amount up to 135 million gallons.

(Sir John Dorington.) This estimate is a 400 million gallon estimate, is it not, not a 300 million gallon estimate?

(Mr. Pember.) Yes, it goes eventually to 400 million gallons.

(Chairman.) Estimate 13 is an estimate of 400 million gallons odd.

(Mr. Pember.) Yes, it is quite right. When you have gone through all of them, not the particular estimate I was then reading from, but when you have gone through all the gradations, you get it up to 400, that is quite true. The first estimate is the 130. then 35 for Staines, and the Southwark and Vauxhall 20, which brings up the present supply to 185½; then the first instalment, with which I have just been dealing, brings it up to 309 as I have said; then there comes a little instalment which brings it up to 320, and then there come another two reservoirs of 37 which bring it up to 357; and the last 43 which brings it up, as you say, sir, to 400 million gallons. That total goes up to the end of Sir Alexander Binnie's 215 million gallons, you know, which he talked of getting from Wales eventually.

The last of our instalments and that is the only figure I need give you, works out at 13,275,382l., and so, says he, if I were to go to the Thames to get a store of water equivalent to Sir Alexander Binnie's 215 million gallons from Wales, and if I did it in the only way in which I thought at that time that Sir Alexander was going to do it, I should do it for 18 millions of money from the Thames. Very well, to match his instalments, for that is what the end of it is—

(Sir George Bruce.) What estimate shows that 18 millions?

(Mr. Pember.) It is Estimate 13 (d).

(Chairman.) But that is assuming 250 million gallons over Teddington Weir.

(Mr. Pember.) No, my Lord.

(Chairman.) The 18 millions.

(Mr. Pember.) There is a sum of 18 millions. That would assume that; but that is quite another one.

(Chairman.) Do you mean the Welsh one?

(Mr. Pember.) Yes.

(Chairman.) Where is the Welsh figure of 18 millions?

(Sir George Bruce.) It was the Thames one he was speaking of.

(Mr. Pember.) Estimate 13 (d) is the price for which we could get 215 million gallons out of the Thames. You see, for the construction of 10 reservoirs to hold 36,700 million gallons, and afford a supply of 215 million gallons a day, we could do that for 18,275,000*l.*, if we did it in gradations to match Sir Alexander Binnie's original gradations for his Welsh scheme. When Mr. Middleton handed in these estimates, he said, for all the intermediate gradations that would be doing the work in the most expensive manner; but when you come to the end for that amount of money, London could get 400½ million gallons from the Thames, and that would be independent of its supplies from the Lea, and from wells in the Lea valley, and from Kent, which would bring up the total supply for London to 520½ million gallons.

(Sir George Bruce.) It does not get all that for 18 millions.

(Mr. Pember.) It does not get all—what?

(Sir George Bruce.) What you now describe, the 520 million gallons.

(Mr. Pember.) No; but he gets the 215 million gallons from the Thames. I say that is outside what London would get elsewhere, and for which, of course, London would either have to pay, or has paid, as the case may be.

Now, I want to contrast, and thank goodness, that is bringing me to the last, these graduated estimates from Staines, with Mr. Middleton's corresponding estimate for the same quantities from Wales, because there comes in the great expense. I gave you yesterday, even making all sorts of allowances, the figure of some 9 or 10 millions which they would sacrifice before they went to Wales at all. Now, I want to show you what they would sacrifice if they went to Wales besides. Let us give the figures. Mr. Middleton gives them, of course, in four instalments, as we had them, and you will find that they are Estimates 15 (a), (b), (c) and (d), handed in at Question 18,286. Before I analyse the figures and justify them just let me give you the totals. The first 123½ million gallons, Mr. Middleton says, would cost 42,000,000*l.*

(Chairman.) Is it 42,000,000*l.*, I have taken down 33,000,000*l.*? Perhaps we had better adjourn now. I hope we shall be able to finish by to-morrow, otherwise I am afraid this must go over till after Easter.

(Mr. Pember.) If you give me 20 minutes after four o'clock, my Lord, I shall certainly be able to finish to-day, and might be able to finish in time for my learned friend, Mr. Pope, to address you.

(Chairman to Mr. Pope.) How long shall you be?

(Mr. Pope.) I shall be about an hour.

(Mr. Littler.) I should take about the same time also.

(Mr. Rickards.) I do not propose on behalf of the Chelsea Company to ask permission of your Lordship to address you separately, after the very exhaustive speech of my learned friend, Mr. Pember.

After a short adjournment.

(Mr. Pope.) My learned friends and I have been speaking about the difficulties that may arise to-morrow. I do not know whether the Commission could sit earlier?

(Chairman.) Yes, we will sit at 11 to-morrow.

(Mr. Pope.) That will suit us quite well. We can attend at 11 as well as 12.

(Chairman.) We will sit on Thursday, if necessary.

(Mr. Pember.) That is capital.

(Mr. Pope.) Then there is no doubt about finishing.

(Mr. Pember.) That is a very great thing. Do not think I will take any more time though.

(Chairman.) No.

(Mr. Pember.) If there is anything I am doing at too great length, my Lord, for goodness sake stop me.

(Chairman.) No, you are not doing that.

(Mr. Pope.) I do not intend to repeat a single thing my learned friend has said, or to go over the same topics, therefore I do not want him to stint himself, because he will be the only speaker on those lines.

(Mr. Pember.) When we broke off—

(Chairman.) Wales would cost 42,000,000*l.*, you said.

(Mr. Pember.) The first instalment, that is to say, of 123½ million gallons.

(Chairman.) I have got that wrong somehow or another. I have got 33,000,000*l.*

(Mr. Pember.) I will tell you how that is. Mr. Middleton explained that in a note attached to the estimate. You will see Mr. Middleton has got by the side of the estimate, "Add for works in progress," 7,000,000*l.* odd, and "Add for accumulated interest" 13,900,000*l.* odd. Without allowance for future expenditure on works; that is to say, if they were treating the Welsh scheme as a final one not to be exceeded, he would have to deduct the further expenditure on works, which would be 7,000,000*l.*, and he would have to lower the amount, of course, in consequence, for accumulated interest from 13,900,000*l.* to something else.

(Chairman.) Yes, that is in his note.

(Mr. Pember.) And so he brings out the 33,000,000*l.*

(Chairman.) Yes, that is the figure I have taken; I do not know why.

(Mr. Pember.) Then that being the first instalment, the second brings the cost up, with a similar change, to 45,000,000*l.* In estimate 15 (b) you get the instalments, which bring it up to 46,800,000*l.*, with a similar note to the one there was in the previous estimate if you treated that as the final instalment, and there was nothing for the further works showing what it would be reduced to, and the figure there is 36,700,000*l.* odd. Then you come to estimate 15 (c), which brings it up to 172 million gallons from Wales, for 52,715,000*l.*, and a similar note again, which, if you employed the same considerations that you did with regard to the first and second instalments, would bring it down to just under 47,000,000*l.* Then the next estimate, 15 (d), is 57,262,000*l.*, and the note there shows that there would be no alteration, because you have nothing for further works, of course, as he pointed out to you in the last instalment, the item for further works being only a temporary thing, an interim cost, and put in for the purpose of showing what was going on at the time, and justifying the amount from time to time put aside for accumulated interest. You therefore find, of course, that the two, the note and the estimate 15 (d), which is the final instalment from Wales, exactly coincide—of course, they must do.

Now to justify those Welsh estimates. They all start alike from the estimate by analogy with the Thirlmere, the Vyrnwy and the Elan schemes so far as those three schemes supply one. Those three old schemes work out at an average of 91,611*l.* per million gallons supplied. Let me assume for a moment—of course I will deal with it; do not think I am going to shirk it—that the analogy is correct, because I say that for the purpose of explaining Mr. Middleton and not apologising for him. We will, if you please, just work out what I have got to say on one estimate alone, the 123½ million gallons; the others, of course, all follow suit. You have got to do first a very simple sum. If he is right in saying that so far as the three schemes provide an analogy, and therefore show what the scheme ought to cost for the reservoir and the 81 miles of conduit, you have only got to multiply the 91,611*l.* by the 123½ million gallons, and the result, of course, is his first item 11,313,958*l.* Then you have to add the items which are not in the 91,611*l.*, which are something attaching to the scheme of Estimate 14 which is not analogous to those three schemes, that is to say, attached to it after the analogy has ceased. The analogy, so to speak, is good for the kite, and now you have got to add the items that represent the tail of the kite. Let us see what they are. It so happens that the tail of the kite properly so-called, that is to say, the extra aqueduct, is exactly the same in mileage as the original aqueduct of all the other schemes that work out as you remember to an average of 81. So you have got to add 81 miles of aqueduct to that 11,313,000*l.* That, as Mr. Middleton told you, he had taken at 64,000*l.* a mile; and if he was not justified in that, I have not the slightest doubt that Colonel Rathbone will tell you so. On the other hand, if he considers that he is justified in it, Colonel Rath-

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Mr. Pember. bone will tell you that again. That amounts to five millions more. Of course, I am taking round figures now, but it is exactly 5,184,000*l.* I take the round figures for speed's sake. Then there are the service reservoirs at Elstree, the terminal works which we take from Sir Alexander's figures, and there are the mains from Elstree to the service reservoirs of the company, and those two items are 1,314,750*l.* and 3,000,000*l.* Then there comes an item for machinery for pumping to such of the existing reservoirs as cannot be reached by gravitation from the Welsh scheme. If you remember, Mr. Middleton put in two tables to show the number of reservoirs and their contents, which could not be supplied by gravitation. I am not going to weary you by referring to them now, but you might like to have a note to the effect that those tables were handed in at question 14,846. That pumping machinery as you see figures for an item of 98,280*l.* Thus he brings us to a capital cost of 20,910,988*l.* That is the prime or capital cost of the works themselves; but the necessity for pumping apportioned to supply like our own pumping on a larger scale is a feature of this scheme, and of course it is in lieu of gravitation works. It is somewhat analogous we may say to the case of a railway, to a rent charge paid for a plot of land in lieu of the purchase out and out. Of course you must capitalise that rent charge if you want to find out what your railways cost you. It must be capitalised. At the time Mr. Middleton made these estimates he was of opinion, as we have already stated two or three times over, that it was the right thing to take the accruing cost of pumping over a period of years; and he is of that opinion still, for the reason which I will not forget to give you. He has done it here in the same way that he has treated his own pumping elsewhere, just as he has done in his Thames estimate. He makes out that the pumping to supply during the twenty years which that supply will last, before it is what engineers call exhausted, will cost 279,549*l.* With the addition of that 279,000*l.* we reach 21,190,000*l.* Then he adds for works in progress and for accumulated interest, two of the heaviest items of all, for the work in progress itself 7,296,000*l.*, and for accumulated interest 13,916,000*l.* odd. I need hardly add that Sir Alexander Binnie's estimates did not contain a single farthing under either of those heads any more than they contain anything answering to the comparatively unimportant items of pumping machinery, and the annual cost of pumping.

(*Chairman.*) That is the next instalment, it is so absurd to put that on to this.

(*Mr. Pember.*) I am going to explain that at this very instant. You are asking me why that item for works in progress goes on?

(*Chairman.*) That the cost will be incurred I quite understand, but it is not part of the cost of supplying the 123½ million gallons.

(*Mr. Pember.*) No, it is not.

(*Chairman.*) It is expenditure that will have to be incurred for something else but not for that.

(*Mr. Pember.*) Quite so, that is perfectly true. It is only as he told you a temporary debit so to speak and if you like to suppose that he is never going beyond that 123½ million gallons a day, then do—you have got them both—what Mr. Middleton has done in the notes, namely, knock off that 7 millions odd and knock off a certain amount of 13,900,000*l.* which represents it in the accumulated interest, and then you get 33,000,000*l.* So that although Mr. Middleton may have teased us all a bit, at all events he has supplied us with the antidote. But if you do not treat it as a final instalment, as the end of all things, then all I can say is that in order to get at what the cost of the graduated scheme will be at any particular time you are bound to put in the cost incurred for works in progress just as you are bound to put in the item for accumulated interest. It is the expenditure so to speak from day to day and from year to year. There comes a moment in the history of these graduated works—in ours to some extent though not like the extent of theirs, because our stages are so much more simple and smaller than theirs—but there comes a stage in them all when though one stage is unfinished you must be getting on with the next.

(*Chairman.*) Yes.

(*Mr. Pember.*) In fact, as the Greeks used to say of the hares, if you will forgive me a classical allusion, they thought they were what they called *ἐπιγούμους*, that is that they conceived a new litter before the first litter

was born. It was absurd as a matter of physiology, but they did. In these works too there is a sort of superfoetation, and it is undoubted—you cannot get out of it. If you want therefore to know your full capital commitments at any epochs, especially if you want to know with what amount you ought to debit yourself with accumulated interest, you must bring the money expended on the second or third instalment as the case may be into your account and show it as a justification of what you are debiting yourself with in the matter of interest. Of course that item as you have just pointed out disappears at the end; in other words, I say if you choose to take any one of these estimates and say they are the last stage to which London will ever come, wipe that out and Mr. Middleton has done it for you in the note. That is how the estimate is made up. I ought to say that it concludes by allowing the Welsh scheme something to which Mr. Middleton thought it might be fairly considered to be entitled, though not to the extravagant extent which was claimed by Sir Alexander Binnie, for saving the cost of pumping from the Thames. Sir Alexander originally claimed a very large amount, under that head, or rather, I think, he vouched Mr. Deacon for the amount, and Mr. Deacon put it at 980,000*l.*, as you will remember. Personally, I doubt, myself, whether anything ought to be allowed. Of course, my scheme has already been debited with the annual cost of pumping, and, therefore, I should have considered that the comparison was complete; but Mr. Middleton has admitted it and there let it stop. That he says is 352,000*l.*, one third of what was claimed by Sir Alexander Binnie or thereabouts.

I reserved until I described Mr. Middleton's estimate my defence of the estimate from analogy for the 91,611*l.* per million gallons supplied. With regard to that, let me say at once, no one pretends that they have laid out before you at this present moment a detailed and complete estimate of this Welsh scheme. Even Sir Alexander Binnie himself has not done it; you have got no such estimate. Not only have you got no such estimate as a contractor could work upon, but you have not got even such an estimate before you as would have been presented to a Parliamentary Committee, nor from our point of view is such an estimate necessary. I will tell you why. What you want, my Lord, surely for the purposes of your investigation is a fairly trustworthy idea of what such a scheme as this Welsh scheme would cost. That is the way I venture to view it. Surely any of those who hear me, if they were sitting down to get a sort of *a priori* preliminary idea of what such a thing would cost, the first question that they would ask is, is this project the first of its kind; has anything like it ever been done before? If so, what did that project cost? I do not say that this would give you an absolute certainty as to what it will cost, but surely it is a very good way of leading your mind up to an idea of what it will cost. It so happens that this project is not the first of its kind by any means. Three others have preceded it and on a sufficiently large scale and with sufficiently similar circumstances to form a very fair guide. I think I shall show you that in so far as the circumstances differ between these three old schemes and this new one the differences are all against and very largely against this new one—the proposed Welsh scheme. Meanwhile we know that these schemes have cost along with their average mileage of culvert or aqueduct and their purchases of land, their disturbances of property, their re-instations and all the rest of it, 91,611*l.* per million gallons of water supplied. Just let us look at that. The lengths of their aqueducts are known—the Thirlmere, 96; the Vyrnwy, 67; the Elan, 80 miles—all pretty much alike. If you divide those they come to the average that I have taken, 81 miles, therefore, so far as the Yrfon scheme goes it ought to be double as costly as the others per million gallons so far as the aqueduct goes, because its aqueduct is twice the length, and no one has ever suggested that there is anything in the circumstances of the extra 81 miles of aqueduct which go to make up the 162 of the Welsh which would make it feasible at any lower rate per mile or any lower rate of cost, whichever way you like to take it, than the others.

The way that their 91,600*l.* is made up is this: Thirlmere cost 88,000*l.*, Vyrnwy cost 97,000*l.*, Elan cost 89,000*l.*, and some odd hundreds in each case. That makes up the average. Now, what is the next thing, as they have all aqueducts and they all are pretty near the average of 81 miles, what is the next thing in common with them and ourselves? They have all got

these great dams. I am sorry that we have not proved the height and length of the Elan dams; I know, however, as a matter of fact—but we need not bother ourselves much about it—that the two combined are a smaller affair than the Yrfon dam. The lengths and heights of the two other dams have been given you and they are given at question 18,281. The Vyrwy dam is given as 1,075 feet by 161 feet, the first being the length, of course, and the next the height—that is 173,045 square feet. The Thirlmere dam is very much smaller, it is 188 feet long by 80 feet high, that is 15,040 square feet. The Yrfon dam, on the other hand, is 4,750 feet long and 160 feet high, giving a total in square feet of 788,500. Just stop there; that Yrfon dam is $4\frac{1}{2}$ times as big as the Vyrwy, which is the biggest of the other two; it is 52 times as big as Thirlmere, and it is more than four times as big as the two put together. That is one very large item, of course, in the excess of costs. I put this to Sir Alexander Binnie. I also put to him several very expensive features in his scheme as compared with the others, such as the diversion and therefore the re-instatement of six miles of railway, the diversion of 13 miles of roads, the submergence of 31 farms and 108 houses. All these he accepted at questions 9795 to 9799. I added another, the submergence of seven churches and chapels and schools, and that he only partially demurred to, though I admit he did in part, that last one.

Now, I say nothing about possible trouble as to the stratum on the site of his dam; though you heard what Mr. Middleton and others said about that. If this were to occur, there would be a very large increase of expense there which we have not accounted for, and you heard what Mr. Middleton said about the drift there. That he said at question 14,894, and repeated it again at question 17,862. Sir Alexander Binnie was very confident about finding rock there then; but that is many months ago, and it was admitted by Mr. Deacon that they had not made any trials at the time he gave evidence, and that, I say, is many months ago. Now, it would be extremely interesting to know, and of course I do not make the suggestion without knowing something, whether he has been making any trials since, and if so, with what result, whether he has bored, and whether he has come to the hard rock. Ask him any time you please, and see what his answer is. Ask him at what depth he came to it, if he has come to it, which is an hypothesis which I do not take at the moment.

Then he finally pleaded to me that his cost would work out to 96,000*l.* per million gallons, which it does not. Supposing it did, supposing with all these enormous items of expense it did work out 5,000*l.* more per million gallons than the others; just see what that 5,000*l.* for 123 millions gallons would be. Multiply the 123 by 5,000, and it is 615,000*l.* That is what the total amounts to. Just see what he affects to be going to get for that 615,000*l.*—81 miles of conduit, 13 miles of road, six miles of railway, with the huge difference in his dam, which, of course, is spelt with a very big D indeed, besides the churches and chapels, whatever there may be of them, and the farms and the houses, and the schools, and his terminal works besides. As a matter of fact his estimate, handed in at question 9441, for 114½ million gallons does not work out at anything like 96,000*l.* His estimate for 114½ million gallons is 10,000,000*l.*, and if you divide that by 114, it does not work out at anything like 96,000*l.* per million gallons supplied.

(*Chairman.*) No; it is 10,000,000*l.* for 121 million gallons.

(*Mr. Pember.*) Yes, it is for 121 million gallons, and that makes it all the worse.

(*Chairman.*) Worse or better, that is what he said.

(*Mr. Pember.*) Yes, quite true, but I took it as the cost of attaining by the Welsh Gravitation Scheme the 114½ million gallons, I took it to his advantage, but, as a matter of fact, for that he affects to get from the Yrfon a yield of 121 million gallons. Of course to go back to the general consideration of this analogy, I know that there were similar disturbances in the Vyrwy scheme, and I believe that Mr. Deacon has got a church, to which he probably could not dive, still standing in the middle of the Vyrwy reservoir, and I know, but still they are nothing to the like extent of which we are talking here, that there will be a similar submergence on the Elan, because I happen to be concerned for the gentleman whose church and house and so on are submerged. There was nothing of the kind at Thirlmere. Two or three farms were bought up at Thirlmere, and there an end.

But now we have further assumed, I am quite ready to admit that, that he will buy the watershed. So did Birmingham and Manchester buy their watersheds, and so thought Mr. Balfour Browne in common with everybody else that the London County Council intended to do. Sir Alexander Binnie never suggested for one moment that they did not mean to buy it until the middle of Mr. Middleton's examination at question 14,911. Mr. Middleton had been saying that 102,000 acres even at 10*l.* an acre exhausted more than half his estimate of 1,850,000*l.* for "head works" on the Yrfon; for that always is his estimate. You will find that in the estimate handed in at question 9441 that I have already given you. Mr. Middleton had been saying this, but as I say for the first time it was then that Sir Alexander Binnie said he was not going to buy the watershed. It was really almost amusing to find my learned friend Mr. Balfour Browne, only I never like to laugh at anybody in a mess, because I never know when I may be in one myself, cross-examining rather strenuously a short time afterwards to show the absolute necessity of purchasing the watershed, and using the argument which I think is of very great force, namely, that unless Parliament had thought it absolutely necessary they would not have allowed it in the cases of the Vyrwy and Manchester and Birmingham. My learned friend Mr. Pope knows as well as I do, for we were against each other in that Birmingham case, the great reluctance with which the Parliamentary Committee who dealt with that case consented to allow the Corporation to buy the very large estate of Mr. Lewis Lloyd for the purposes of their undertaking. However, Mr. Balfour Browne then—it is at question 19,668—assumed the absolute necessity of so doing. Why should I trouble myself to tease Mr. Balfour Browne? I do not desire to do that, but perhaps it is worth while after all just to show that I am right. Mr. Balfour Browne says: "I do think it necessary—absolutely necessary," and then you told him, my Lord, for the first time that you had been told that they were not going to buy the 102,000 acres, but only purchase the area of the reservoir itself, 3,000 odd acres.

(*Chairman.*) Yes, there is a great difference, but the evidence leaves me completely in doubt what they are going to buy.

(*Mr. Pember.*) So it does me. I have not the slightest doubt as a matter of fact that they fully intended at first to buy it, and then it struck them suddenly to say that they would not; in fact Mr. Balfour Browne having said that up to the last moment shows perfectly well that that he was under the impression that they were going to buy it. As I say, he distinctly affirms, after having given an excellent argument in favour of their doing it, namely, that Parliament must have been satisfied with the absolute necessity before they allowed Manchester and Birmingham to do it; he then affirms, I say, in set terms, its absolute necessity. Then, after making that announcement, my Lord, he turned round to his friends—I watched him, with some slight amusement, and having done it with an agility which really does him considerable credit—he turned round and cross-examined in the other direction to show that it was not in the least degree necessary. However, I suppose that is a thing that a good many other people would have done; I have not sufficient impudence to do it myself.

But, however, I am not concerned very much as to whether they are going to buy it or not, because after all recollect for the whole 102,000 acres of that Mr. Middleton has said, putting it at 10*l.* an acre, it would cost a million of money; that is all. So that it does not come to much when you are dealing with millions at a time.

(*Chairman.*) It is a difference between 102,000 acres and 3,300, if I recollect it.

(*Mr. Pember.*) Yes. Mr. Middleton says: "I put it down at 10*l.* an acre," so that represents a million; but let me give him the million. If he did not buy the 102,000 he bought the 3,300 instead. How much would he save out of those 42 millions odd, or 33 millions odd, whichever it is, and how much out of the total 57 millions that they want in order to supply the whole 215 million gallons of water.

I do not think it is necessary to analyse the later stages of that estimate. I point out to you exactly the principle upon which Mr. Middleton has made it, and the grand result is that if you desire to look so far forward as to forecast the time when London will want as much as 215 million gallons more water in excess of the 185½ million gallons now authorised from Thames,

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and you choose to suppose that it will come from Wales (it is 35 gallons per head for a population of 16½ millions) you may get your 215 million gallons in two ways: You may get it by going still to the Thames and spending some 18 millions of money, or you may get it by going to Wales and spending 57 millions. The London County Council, if you give them the chance, are committed to the gigantic financial blunder involved in the latter expedient. Or, if you do not like to look forward so far as that, and content yourself with looking to the point of taking 123½ million gallons from Wales—a part of the 215 million gallons—we can do that from the Thames for 9½ millions or thereabouts against their 42 millions or 33 millions, whichever you like to take; in that case it would be the 33 millions because you would be dealing with it as the final instalment. If you like to go a little further forward and suppose that London may want, not 123 million gallons, but 135 million gallons we can do it for you for 10,600,000*l.*; whereas they will have to spend 45 millions, or rather I ought to say again—for then it would be the final instalment—just under 37 millions. If you like to go to the third—you may as well have them all—we can do it for 14½ millions as nearly as possible, and they would have to do it for 52 millions subject to a reduction, because it is the final instalment, which I have forgotten at the moment. That is really the gist of the difference between these two gentlemen.

Before I leave this, I think that I ought to contrast this final result of going to Wales for 215 million gallons with Sir Alexander's figures on those estimates of his, which he handed in at questions 9441, 9443, and 9445. He there adopts three gradations, not four—114½ million gallons, 147 million gallons and 200 million gallons. Mr. Middleton follows him so far as the first of the three gradations is concerned in his estimate 19, handed in at question 18,419. I think I had better take estimate 20, because he did not like his estimate 19, but thought there was some mistake about it, and he preferred his estimate 20. There you find that Sir Alexander Binnie's figures are copied from his estimate for the 114½ million gallons or 123½ million gallons—he does not care which you take, nor do I. Sir Alexander Binnie says that he could do it for 10 millions, whereas Mr. Middleton said, of course adopting the note at the foot of his other estimate which we have been considering, he could not do it under 33,935,000*l.* It is worth while to look at that, because he tells you in the estimates handed in at 9441, 9443, and 9445, that he could give you 114½ million gallons for 10,000,000*l.*, 147 million gallons for 14,000,000*l.*, and 200 million gallons for 16,000,000*l.*, which I cannot for the life of me understand, because I always thought that a long time ago he spoke of two instalments, one of which would cost 14 millions and the next 12 millions, and they do not come to so very much more—they come to 294 million gallons against the 200 million gallons here. Sir, I do not care to twit him with that. I am content with the result as between him and Mr. Middleton. Now, this is worth noticing. Just look at Sir Alexander Binnie's estimate first, and then just see what a light it throws upon what he thinks he could do the Welsh scheme for per million gallons. He gives his estimate for the Yrffon reservoir and head works at 1,850,000*l.* in his estimate at question 9441, and you will also find it on Mr. Middleton's estimate 19. Then he adds 162 miles of aqueduct, which is to be big enough to carry 200 million gallons a day, and the cost of that is 6,867,500*l.* Now, I want first to show how those figures support my argument from analogy. Supposing I could conceive his aqueduct only being 81 miles long instead of 162, then instead of the 6,867,500*l.*, of course, his aqueduct would cost, we will say, half the money, that would be 3,433,750*l.* Now, add that to the head works, which he puts himself at the Yrffon at 1,850,000*l.*, and what do you get? You get 5,283,750*l.* That would represent his estimate for everything included in what the other three older schemes got for 91,000*l.* Now divide 5,283,750*l.* by 123, and you will find that you get as nearly as possible 43,000*l.* per million gallons.

(Chairman.) Instead of the 91,000*l.*

(Mr. Pember.) Instead of the 91,000*l.*, that is a stumper, forgive me the phrase.

(Chairman.) It is a stumper for one side or the other, I do not know which.

(Mr. Pember.) Yes, there is no doubt the others did that for 91,000*l.* and did not do it for less on the average; here is no doubt about that: now this

gentleman comes and says, Although I have got to make a dam of an enormous size; although I have got to displace I do not know how many houses, schools, chapels, and all the rest, and although I have got to make six miles of railways and 13 miles of road, which is far greater than anything of the same nature that those other gentlemen have had to do, I will do it for 43,000*l.* against their 91,000*l.*; and this, mind you, although as I say, there are so many elements of cost against him. Well may Mr. Hunter say what he did say at question 20,145. I liked it so well at the moment, having made up my mind about this thing at the time that he said it, that it is almost worth while to quote it. He said what I should say if an engineer came to me when I had got these three schemes in my mind, and knew what they cost, and said he would do it for so much less, "I should naturally say," says he, "Well, my friend, I have no doubt you are perfectly honest in this Report that you put forward, but I think you are mistaken, and until you prove to me that my estimate by analogy is wrong, I should rather work upon the estimate by analogy than upon an estimate which I think you have not quite sufficiently considered." Now that is my view, and I quote Mr. Hunter in support of it.

Now turn to the other side and see our estimate with the correction made about pumping machinery, and reducing it to 33,840,000*l.* I ask whether there is a single item in that estimate which ought not to be there. Is there any reason, for instance, for excluding an item for mains to connect with the service reservoirs of the various companies. You must assume that the latter, that is, the service reservoirs of the various companies, are conveniently situated for the work that they have to do, and that, whether the water be Thames water or Welsh water, it must get to those places. Mr. Middleton has made an estimate of that item of 3,000,000*l.*, and his figure has never been attacked. Let Colonel Rathbone advise you whether that amount is the fair one or not. Mr. Middleton will no doubt give him the benefit of his calculations in the matter. If some amount or other ought to be included for that purpose, may I ask why it did not find a place in Sir Alexander Binnie's calculations on the other pages? So with pumping machinery to supply where gravitation will not do it. Why was no estimate given of this? It is a matter which Sir Alexander Binnie has got well in his mind.

(Chairman.) I wish you would make my mind clear about that, Mr. Pember. I cannot quite see why there should ever be any pumping of Welsh water. The Welsh water would be supplied at the places where it can supply by gravitation, and it would not displace the Thames water that is now pumped to those high places.

(Mr. Pember.) That depends, of course, upon how far the Thames water will go—I mean how far it is available, how much there is of it in comparison with the Welsh water.

(Chairman.) The Thames water is quite enough clearly for those high places, and why should you ever pump Welsh water up there when you can supply it to all the lower regions.

(Mr. Pember.) It depends where the high places are. I do not know; they may be so situated that they can take the Welsh water better.

(Chairman.) No; if the Thames water can be pumped up to there, why should it not continue to go? I have never been able to understand that point of yours.

(Mr. Pember.) I am bound to say that I do not understand myself, it is a fact—

(Sir George Bruce.) You will only want to pump the Welsh water a very short distance; you would naturally pump the Welsh water up to those high points, but you want to pump about 30 feet instead of 200.

(Mr. Pember.) That is what I ventured to say just at this moment. That probably would be an explanation.

(Chairman.) It is quite an explanation.

(Mr. Pember.) I said it might be more convenient to pump the Welsh water than otherwise.

(Chairman.) Yes, that is an answer.

(Mr. Pember.) I only spoke in the dark, and the darkness to me is very dark indeed. Pumping to store and pumping to supply are things that are very present to Sir Alexander's mind, because we know how tremendously he debited us with them. I think he must have included such an item, and I will tell you

why, because he gave you a list of reservoirs that he could supply by gravitation, and boasted of it, and I suppose, therefore, he meant to supply them.

(Chairman.) Yes, certainly.

(Mr. Pember.) And had to admit to me that there was one-sixth that he could not, and he never said, I shall not supply these at all.

May I ask, lastly, why he had never taken into account the enormous burden of accumulated interest? Not a shilling is down for that. This burden seems astounding at first sight, but then you must remember that you have got two idle periods to consider. You have got first the idle period during construction while the idle capital is growing, and then you have got the second idle period after its construction while the idle capital is coming gradually into use. Those periods begin, the first with 1900, ending with 1916 I think, and the second begins at that time and ends in 1935; a total period of 35 years is given you on Mr. Middleton's Table 2a. The same thing occurs in the Thames Scheme, but, as I have said, not to the same amount, in consequence of the graduated fashion by which we can make our various Thames reservoirs.

To get at the total cost I insist Mr. Middleton is right—you must in the first include the interest for the whole period. It may be said that during the second period the income is gradually mounting all the time, and therefore should be set off against interest. Perfectly true; and if I were considering the Welsh scheme alone and what the ultimate cost of the Welsh scheme would be, it would be perfectly right to make this set off, and no doubt it would be a very large one. But recollect that that is not what we are doing—we are considering the two schemes together, the Welsh and the Thames, and I must therefore get at the prime cost of each first, and accumulated interest is an ingredient in our scheme as well as in theirs. I include it, therefore, in both—when I say I it is Mr. Middleton, and I cannot omit it from both. I will tell you why—because from the nature of their scheme—their great instalment of 123 millions, for instance, in one lot—it is so very much greater in theirs than it is in mine, that I cannot say we will pair off, as it were—the difference is too important a factor of relative costliness to enable me to do that. The difference against them, as a matter of fact, comes out to something like 20 millions. Of course the 20 millions is on the whole, when you come to the very last supply, when you get up to the 215 million gallons and the accumulated interest is the difference of what I say. Very well, as to the set off for the growing income which may be made afterwards, if you like, by all means make it, but it will not help Wales, and I will tell you why—because if you set off in favour of Wales to reduce the accumulated interest for Wales you must set it off in favour of the Thames for the accumulated interests against the Thames; and once more the operation will show enormously in favour of the Thames scheme, and against the Welsh, and also once more, not only as far as amount goes, but it will tell in a greater ratio in favour of the Thames, because ours being a graduated scheme, it will begin to fructify from point to point very much more quickly and very much more easily.

Now, if Sir Alexander goes to Wales for his 114½ millions or his 123 millions—it does not seem to matter which, for the Yrfon scheme gives 121 millions—the cost all told will be 33,900,000*l.* in round figures. That is the result if we confine ourselves to bringing up the supply to something like 300 million gallons from Thames plus Wales, as against something like 300 million gallons from the Thames alone. Now, if we choose the Thames, if we take only 114½ million gallons, then you know exactly how much we shall have to pay for that, and if you take 121 million gallons from Wales, you know exactly what you will have to pay for that.

Now, let me think whether I cannot cut this a good deal shorter, I think I may if you just forgive me for a moment while I pass over a good deal which I was going to bring before you. I will tell you what it is I am going to pass over, and why I do it. I do it entirely to save time. The great fight upon estimates, of course, has been between Sir Alexander Binnie and Mr. Middleton. I have here an elaborate comparison done in the same way between Mr. Hunter and Sir Alexander Binnie, and between Mr. Hunter and Mr. Middleton, and there are one or two points in which Mr. Middleton and Mr. Hunter on matters of detail differ; for instance, Mr. Hunter adds on a good deal

more for the cost of pumping on the Thames scheme than Mr. Middleton, but Mr. Hunter on the other hand adds on a great deal less for interest than Mr. Middleton both to the Thames scheme and to the Welsh. I had compared very carefully a lot of figures which showed how the two engineers differed, and the extent to which they differed, and if I thought they were of the slightest use to the Commission I should be very happy indeed to let the Commission have them; but I am watching the clock, and with an apology therefore to Mr. Hunter, whose evidence I value very much, I propose to omit them, merely saying this, I should like to explain the two points of pumping and interest, without any relation to the figures, on which Mr. Hunter and Mr. Middleton differ, and saying why as a matter of fact I should rather prefer to ascribe myself to Mr. Middleton. I said that I would explain that matter of interest and I will at the risk of a retort that I take Mr. Middleton's view in the matter because it suits me to do so, because on the whole Mr. Middleton does not make the total cost of the Welsh scheme so great because he only makes it 37 millions against Sir Alexander Binnie's 57 millions, and nearly all this is the result of his not charging his interest in the way that the other gentleman charged it—at the risk I say of the retort that I take Mr. Middleton's side for that reason, I propose to take it. In the first place I should like to say a word about pumping; because that pumping, if you will remember, and the non-capitalisation of it by Mr. Middleton was the thing I undertook to explain. Mr. Middleton has all along objected to capitalising the annual pumping charges. He has treated his various estimates as estimates of cost and charges of and during successive stages of the water supply—the water history of London. These stages, says he, represent epochs. If you could lay your finger upon any one epoch, 1916, 1931, or 1948, and say that is final, London will never henceforth increase—at that point the consumption of water becomes a final figure, and then it would become right to capitalise the current expense of pumping as standing in lieu of permanent and final capital expenditure. But taking as he takes the burdens of each epoch separately, he can write down the actual charges that will occur in that epoch, pumping amongst others, from year to year precisely, because the epochs are not perpetual. It would be both unnecessary, says he, and improper to capitalise, because capitalisation is a thing which is incident to perpetuity which for the purpose you may take as a convertible term with finality. Of course he would be perfectly wrong if he did not provide epoch by epoch, for the cost of pumping the preceding ones. For instance, take those Estimates 1 and 9 with which I dealt just now, 1 carries London on until she uses 185½ million gallons a day, and he begins his pumping there from nil till he goes up to the full amount of 185½ million gallons; Estimate 9 carries on London until she consumes 300 million gallons a day, and as I showed you by that diagram, Estimate 9 includes all the prime cost of Estimate 1 and continues the pumping charges of Estimate 1 at the full amount all through its own period of 19 years. Suppose he were to proceed to a further instalment beyond the quantity that there is in Estimate 9 and to a further period, he would have to construct an estimate then which bore exactly the same relation to Estimate 9 which Estimate 9 bore to Estimate 1. Say that it was for another 100 million gallons, and say, if you please, that it is a period of another 15 years, now see what that would do, that would add 15 years to the period of Estimate 9, and in fact that estimate in it would be for a period of 50 years instead of 35 years, and the ultimate amount at the end would be 270 million gallons instead of 170 million gallons and you would find the item for pumping charges would be thus described, the cost of pumping to supply a quantity increasing from nil to 270 million gallons a day during 50 years instead of finding as you do in Estimate 9, the cost of pumping to supply increasing from nil to 170 million gallons in 35 years, and so on *ad infinitum*. Just as he would have to estimate for such final instalment, or rather such a fresh instalment, if it would not be considered as final, just as he would have to do that so would the Welsh champion have to do for another instalment upon him too, and it would be found that exactly the same factors of comparative cost would be maintained between the two projects in that fresh instalment, namely, our capital cost, plus our actual pumping charges, epoch by epoch would be matched against the actual cost of a gravitation scheme epoch by epoch, and that is all he has added. But as I say, if you please to take any one of these epochs that

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he has taken for Wales and say this is final, then I quite admit you must capitalise his pumping charges by a certain number of years' purchase for perpetuity as I did with his Estimate 9, and you saw what the result is, that I raised 2,200,000*l.* to 2,900,000*l.*, that is the whole story. That is his defence.

Now then as to interest. Mr. Hunter only takes in the first place the interest of one reservoir, that is Mr. Hunter's way of doing it, which he puts at 600,000*l.* Now he charges interest on that for five years. That is only one item out of the total expenditure—I am dealing now with our own estimates, not his—for a Thames scheme of 4,000,000*l.* odd. I venture to think there is no use in confining ourselves to a partial selection out of a total expenditure. Then, afterwards he takes what he calls deferred interest on the residue, minus 600,000*l.*; and once more I venture to suggest that there is no reason first of all for the immunity of the 600,000*l.*, upon which he has charged five years' interest, nor is there any reason for limiting the charge against the rest to a certain number of years. Surely the thorough and the simple method is that adopted by Mr. Middleton—charge yourself the full amount of accumulating interest on your expenditure as it goes on until the whole has become remunerative. That is the only way of getting at the full amount of the prime cost. Do that both with the Welsh and the Thames schemes, then you get the real prime cost of each for comparison. About that I have no doubt; whatever doubts there may be about his scheme for pumping, there can be no doubt about his scheme for calculating the interest. You can make the subsequent set off if you please for resulting income and increasing income for each of the two schemes. That is how I deal with that. I state that, as a matter of fact this is what I should do; although I feel that I am perhaps treating a little cavalierly most valuable evidence on the part of Mr. Hunter. Now that I have shown you that, and put you upon the scent as to where he and Mr. Middleton differ, namely, in the charging of interest, both against the Welsh and the Thames scheme, and in the charge for pumping and the capitalisation of the pumping against our own scheme, I have done all I care to do, and, therefore, I finish, as I am very glad to finish, my analysis of the engineering evidence in this case.

Now, there is very little more that, I am thankful to say, I have to add. You thought it worth while, my Lord, to ask the several companies for independent estimates of their population, their water needs, and their resources, and their expenditure by 1937. I have no right whatever to demur to anything which you, my Lord, and your colleagues have thought it right to ask for. I confess, myself, I should have thought it surplussage unless the Commission intended to go behind Lord Balfour's Commission, who fixed 18·2 as the decennial increase for the whole of London, and 35 gallons per head as the consumption for the whole of London. But having those two factors, and also the 200 million gallons minimum over the Teddington Weir, we could easily take out the total amount of water wanted for storage and for supply. And surely, I venture to think, the right way to regard the water future of London is to look at it as a whole. You must do so if the water comes from Wales. That is clear; you can do no more, you can do no less. Why try and do more, I would venture to say, if it has got to come from the Thames? However, the Commission made a demand which has been complied with, and I confess I have looked at the information with a certain amount of interest since it was given, because it very strongly confirms our figures.

The New River was the first company to give its individual forecast. The figures are not so pat in the case of the New River as in some of the other cases, but I gather that Mr. Francis adhered to his figure of 1896, namely, 66 million gallons as his average supply in 1937. His forecast of cost is 1,700,000*l.* exclusive of his contribution to the authorised Staines reservoir. I take that, because I think it is right only to take that because the cost of the Staines reservoir is inside the 185½ million gallons. I cannot find that he gave any actual forecast of the population, but from the tables which he put in, at question 22,660, I gather that the company now supplies 1,100,000 or 1,200,000 people, and it would look as if the increase would bring them up to something like two millions in 1937; and moreover as a matter of fact the 66 millions per day, divided by 35, does give a population of 1,900,000 as nearly as possible.

The East London followed suit. Its estimates were: population in 1937, 2,472,000. Mr. Bryan gave that;

its water needs given by the same gentleman, 80½ million gallons a day, which is equal to 30·60 gallons per head. Then he told you what his supplies would be and made them up to 87 millions altogether. The estimated cost for that was 3,470,000*l.*

The Southwark and Vauxhall gave their estimate for the population at 1,363,000, their water needs at 47 million gallons, nearly 48 million gallons, their cost at two millions.

The West Middlesex came fourth. Their special estimate of population was just over a million, their expenditure, exclusive of the present Staines scheme, was a million and a quarter, and their estimate of supply wanted was 37½ million gallons.

Then came the Grand Junction with an estimated population of 920,000 odd, an estimated supply of 39 million gallons and some odd thousands, and an estimated cost of 1,600,000*l.*

Then came the Lambeth. Now I cannot find that they have given an estimate either of population or of supply needed, so the record in their case is incomplete.

(*Chairman.*) Yes, you will find it in the estimates handed in at question 26,867. They estimate that they will want in 1937, 61 million gallons a day, at a cost of 2,300,000*l.*

(*Mr. Pember.*) That is very careless of me; I did not catch the first figure, but the 2,300,000*l.* I have got. They do give their future expenditure at 2,300,000*l.*, and I was going to say that I might do something even to supply the hiatus as to the population and future supply.

(*Chairman.*) 61 million gallons a day they say, and that you might divide by 35.

(*Mr. Pember.*) The sum I have done is that they will have a population of a million and a half, and their supply at 35 gallons per head will require some 50 million gallons; so I was not so far out.

Chelsea has given its future supply, and if I followed it aright, it does not speak of needs unless I have forgotten that again. But its provisions it puts at 15½ millions; its future population at 540,000 odd, and its expenditure at 350,000*l.*

Kent alone remains. It gives its expenditure at a million and a half; its population at 1,465,000, and its resources at 51 million gallons.

Those separate expenditures—and this is what I want to say, because I think it is so interesting—reach a total of 13½ millions, and the total population comes to about 11 millions—very closely indeed to the Balfour Commission estimate.

(*Major-General Scott.*) But that is in 1937.

(*Mr. Pember.*) And the other was 1931.

(*Major-General Scott.*) That does not agree with the Report of Lord Balfour's Commission.

(*Mr. Pember.*) It is less, and that is what pleases me. I say, when you get the estimates of individual companies, they come to less than I have provided for—they come to less in population, and, as I shall show you, they come to less in cost; so that all Mr. Middleton's and Mr. Hunter's estimates for what we can do on the Thames are in excess of what the eight companies say they really want.

(*Chairman.*) What do you make the total population, for I could not get at all a figure for the total population?

(*Mr. Pember.*) I have got the total population, but I think I ought to add 200,000 to it because you told me the Lambeth was 1,600,000, and I thought it was 1,400,000. The total population comes, as nearly as possible, to 11,200,000; I quite admit Major-General, that their estimates are less than the estimate of the Balfour Commission.

(*Major-General Scott.*) But the companies were requested, I may remind you, by the Commission to adopt the estimate of Lord Balfour's Commission in making out the estimate of capital expenditure.

(*Mr. Pember.*) Then they did not do what they were asked—that is all I have got to say; that is quite clear. But that does not prevent the instructiveness, from my point of view, of what they did.

(*Major-General Scott.*) Certainly not.

(*Mr. Pember.*) I say we have estimated 18·2, we have estimated on 35 gallons per head, and we have estimated a larger amount in the expenditure for what we propose to do than they have altogether. Now let me knit this up; 11,000,000 is the population—

(*Chairman.*) This cost of 13,000,000*l.* odd covers much more.

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(Mr. Pember.) That is just what I want to emphasise.

(Chairman.) It covers not only storage reservoirs, but also mains.

(Mr. Pember.) Quite so, otherwise Mr. Middleton and I would be very much in a corner. The total population comes as nearly as possible to 11,200,000; the total supplies come to 395 millions—just a little below the Balfour Commission again; and the total expenditure which I did give comes to 13½ millions.

Now, I want to see how this amount of expenditure compares with the estimates of Mr. Middleton and Mr. Hunter. The proper estimates, of course, to compare would be such an estimate as Estimate 9, which is quite enough to take, and I will take that one on which I think it is 8,410,000. If you like to capitalise the pumping, you will recollect that it is a little over nine millions, namely, 9,034,000. Estimate 10, by the way, which brought Mr. Middleton to the conditions of 1898, was 10,399,000. Mr. Hunter's estimate was 10,919,000.—a little more, but nothing to speak of when you are dealing with such large figures. At first sight it would seem that Mr. Hunter and Mr. Middleton would fall short by about three millions below the aggregate estimates of the companies. That is not so. Your Lordship has anticipated what I was going to say. Those estimates of the companies contain other elements besides the storage and the pumping machinery to which Messrs. Hunter and Middleton were confining themselves. The companies have included a sum for the annual expenditure on ordinary distribution mains, and so on, and those items are very large, the New River have included 480,000; the East London, 646,000; the Southwark and Vauxhall, 1,000,000; the West Middlesex, 500,000; the Grand Junction, about 550,000; the Lambeth, 1,150,000 (half the 2,300,000); and as for the Chelsea and the Kent, I do not think I can very well give the Chelsea and the Kent, at least, not very comfortably; but those items of the six companies make a total of 4,326,000. to be taken off the 13,700,000. odd of the total amount, and bring down, therefore, their independently estimated requirements by that epoch to something just about the point of Mr. Hunter and Mr. Middleton.

(Chairman.) It is fair to say that those estimates of the companies were not tested at all; they were very loose, and broad, and wide.

(Mr. Pember.) I admit, still they were done absolutely independently.

(Chairman.) Yes, there is this difficulty suggested by Major-General Scott, the decennial increase of 18·2 per cent. brought up the population of London to 11 millions in 1931.

(Mr. Pember.) True.

(Chairman.) How could the same decennial increase, extended to 1937, be also measured by 11 millions odd.

(Mr. Pember.) I suspect the answer is, that it is not the same decennial increase. I suspect that if you were to add the forecast of the eight companies in that respect together, you would find that they did fall below the 18·2 of the Balfour Commission.

(Major-General Scott.) I understood you to say that the companies had taken 18·2.

(Mr. Pember.) No, that is what I did not say. I have taken 18·2, and Mr. Middleton has taken 18·2.

(Chairman.) If you have taken 18·2, you ought to get more than 11,219,000 in 1937.

(Mr. Pember.) In dealing with that evidence, I have been dealing with Mr. Hunter and Mr. Middleton, and I have been taking 18·2; but I say the companies did not; they took their own independent percentages. I am not claiming, recollect, for one moment that those independent estimates of the company are gospel, so to speak. All I say is that it is a very extraordinary thing that taken independently, as they have taken them roughly, as you suggest, my Lord, still, as a matter of fact, they all work out that London will want at that epoch, they say, in 1937 (we say in 1931) an expenditure over the Thames and the Lea of something like, say, 10 millions of money, and there they agree with Mr. Middleton, and with Mr. Hunter, and with me.

Now, thank goodness, I have all but done; a very few minutes will bring what I have got to say to a close. I suppose I must just say a word about the navigation of the Lea and its relation to the water companies. I very much doubt its relevancy, but what does it come to? The needs of the navigation must be taken to have been

arrived at in 1855; the sole topic is, does it suffer materially by an occasional diminution in the lower reaches of the 5,400,000 gallons which the Act of 1855 gave? Mr. Corble tells you, and he is of course an authority, that in his judgment it does not—that as things have been up to now he has felt justified in accommodating the water companies in the way he has accommodated them. He has been twitted with his pecuniary obligations to them. There is another side to that however. But for this 40,000l. in hard cash which he was given in 1855 or thereabouts by the New River, and but for the 4,000l. a year of present contribution, the Lea Conservators would be bankrupt, as the navigation does not pay its way; it would be self-doomed to decay, and there might be a query, and a very pregnant query, which might be put—is it worth galvanisation? If you say it is "Very well," I answer "the water companies do it," and they are doing it at the present moment. And so they solve a problem for the public, and surely that alone makes them worthy of some consideration and justifies Mr. Corble. I say that is leaving aside the principle that it is better to let a few barges ground for 24 hours than to leave the East End of London gasping for water. But further, remember that what has taken place in the way of damage has been during an epoch of insufficient storage. Nobody denies that. It will be a very different thing in future when the storage is made sufficient. And, after all, supposing that even, as Mr. Corble suggested in the box, some storage had to be provided to meet the occasional calls on the navigation water, as I will call it, of the Lea, it would only be for the maintenance of the difference between 5,400,000 gallons and what goes down now in very dry times, a very small amount, and only upon a very few occasions. Lastly, if you are going back on the Balfour Commission as to the Lea supply, all I can say is then you will have to embark on a very long and intricate inquiry, of which Mr. Corble's evidence would hardly be called the fringe.

If I allude to the Lea at all, I think I ought, to touch the question of whether the pumping operations of the two companies do really deplete it or not; if your Lordship does not think it is relevant, I stop at once, and do not go into it.

Mr. Middleton gives the best possible reason for saying it does not. The suggestion that some local wells behave in a certain way may be due to various causes, a year's drought, for instance, or the effects of local in pumping one against the other; but to prove anything the way of connection between the Companies pumping, and the loss of water in Hertfordshire, you must show a universal lowering of deep wells coincident in time and quantity with the growth of the Company's pumping. That, I insist, has not been shown, and even then an apparent coincidence, or rather the inference from an apparent coincidence, might be refuted. The true test is that suggested by Mr. Middleton, "Has anything happened to the flow of the Lea, which has not happened to the flow of the Thames?" The two watersheds are contiguous; they are subject to the same climatic conditions, with one important exception, and that is that the rainfall in the Thames is two inches greater than the rainfall in the Lea. That difference even Mr. Baldwin Latham admits. The areas of their respective watersheds are known; there is no suggestion that the rainfall of the Thames has altered of late years in one way, and that the rainfall of the Lea has altered in another. There has been no pumping to speak of in the Thames Valley, and it follows therefore that the only factor of difference in their conditions could have been this pumping. If it has been so serious in its effects in one direction it ought to be equally apparent in another. Therefore if the evidence that they have given you about wells and so forth is true, you ought to find that the relations between the flow of the Thames and the flow of the Lea have altered. Mr. Middleton told you that the relative flow of the two rivers has not altered distinctly. He told you that by-the-bye at question 14,512. But if any year, my Lord, ought to have shown a tell-tale difference, it would have been the year 1898, and that in its dryer months. Now you have had the figures for the three dry months of July, August, and September taken out. Here they are, and I venture to repeat them. On the Lea, in July, 35 million gallons (I leave out odd figures); August, 29 million gallons; September, 24 million gallons. The watershed of the Lea is 422 square miles, or 270,000 acres. The flow that represents for those three months for each thousand acres, is 132,000 (leaving out odd figures) for July; 107,000 for August; and 91,000 for September. Now let us take the Thames: 317 million gallons for July; 272 for August, and 213 for

Mr. Pember. September; area, 3,766 square miles, or 2,410,000 acres; flow, per thousand acres; 131,000 for July; 112,000 for August, and 88,740 for September.
31 Mar.'99. (*Chairman.*) Can you give me the reference to those figures?

(*Mr. Pember.*) The table was handed in at question 23,522. That gives the Lea with a worse rainfall, and all this pumping, the climatic conditions being otherwise equal, for July 132,000 gallons per 1,000 acres against the Thames 141,000; it is better than the Thames there; in August it is 107,000 against the Thames 112,000—not much worse; and it is 91,000 for September against the Thames 883,000; again better. In spite, therefore, of all the pumping in the worst year you can have, the flow of the Lea is rather better per thousand acres than the flow of the Thames. Why, if we have been doing all this damage?

Now as to the contention of Hertfordshire on the point it must not be forgotten that, looked at from the point of view from which alone you can regard it, namely, as a factor, or constituent in the future total water supply of London, this supply from wells in the Lea really is no such very great matter, as Lord Robert Cecil pointed out. Of course, it is important to the New River and the East London Companies, highly important, who exclusively pump it, but Lord Balfour's Commission only attributed 40 million gallons to it altogether, of which, as I understand the evidence on our side, the 29 million or 30 million gallons (as Mr. Frances gave it), are now pumped or can be, and Mr. Baldwin Latham even went beyond that, because he said at times in 1898, and he said it rather savagely, as though it was a sort of accusation, that we had pumped 35 millions. That shows that our present powers want no very great extension to pump the 40 million gallons. You do not sit there, my Lord—forgive me for saying so—to redress the supposed grievances of Hertfordshire. I say nothing of the alleged right, or the suggested right, or the veiled suggestion of a right, of the inhabitants of a county to all the water that falls from Heaven upon it, and percolates into the vast subterranean reservoirs below it. Whoever heard, I should like to know, of Cumberland or Westmoreland claiming Thirlmere, or Perthshire claiming Loch Katrine.—I believe it is in Perthshire, by the bye! Whether these vast receptacles of water are above ground or below it, I say they are the common gifts of Nature to be disposed of for the general good in the best possible way,

and not according to the comparatively petty needs, wishes, or jealousies of the slender populations that happen to be either above them or upon their banks, as the case may be, or in their neighbourhood. You cannot have a sort of heptarchy of watersheds. It is far too important a matter for any such suggestion. I quite admit that of late years Parliament has on several occasions been very reckless in the way it has allowed watersheds to be snapped up by communities to an extent far beyond their needs, and I think, for instance, it would be in the highest degree wrong if Parliament allowed London at this moment to pounce on this vast Welsh district, when it has magnificent watersheds close at home. But no one can say London did not want the Hertfordshire water at the time it took it, or that, situated as London is, it is unnatural that it should have been allowed to do so; and once given, I say it would have been in the highest degree improper to revoke the gift, and I cannot conceive Parliament doing so. Any further grant of pumping powers in the Lea Valley must, of course, be made or withheld on the ordinary grounds of expediency, and if 30 to 35 million gallons represents the present powers, so far as Lord Balfour's Commission goes, it is only a question of five or 10 millions more, whatever the case may be about the present power. I do not think such an amount will affect your mind very much in dealing with that vast economic question of the Thames and the Lea and Kent supply *versus* a Welsh one.

Now, my Lord, I really have brought my labours and the trial of your patience, so far as I have had to exercise it, to a close. Of course, I could go on and talk about the question, as to whether or not you should create a statutory authority to become the purchasers of this water authority. I have my own ideas about amalgamation, and I have my own ideas about control. My learned friend, Mr. Pope, and I have talked these matters over and over again, and he is in full possession of my views on the subject, and I believe I am in full possession of his. I think myself that those are so much matters of declaratory policy, and are so far outside a review of the evidence in this case, that I should be very wrong if I did not leave them to him as the senior counsel practically representing with myself, as I have done for other purposes, all the water companies here; and therefore I abstain from beginning, "Now, then, what does all this come to?" and making that peroration, which I think will be far better done by my learned friend than it could be done by me.

[Adjourned till to-morrow at 11 o'clock.]

SIXTY-THIRD DAY.

Wednesday, March 22nd, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

SIR JOHN EDWARD DORINGTON, Bart., M.P.
 SIR GEORGE BARCLAY BRUCE, Kt., C.E.
 ALFRED DE BOCK PORTER, Esq., C.B.

Major-General ALEXANDER DE COURCY SCOTT, R.E.
 HENRY WILLIAM CRIPPS, Esq., Q.C.
 ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary.*

Mr. Balfour Browne, Q.C., and Mr. F. Freeman, Q.C., appeared as Counsel for the London County Council.
 Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.
 Mr. Littler, Q.C., and Mr. Lewis Coward appeared as Counsel for the Kent Waterworks Company.
 Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.
 Sir Joseph Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.
 Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.
 Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.
 Sir Richard Nicholson appeared for the County Council of Middlesex.
 Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. Pope.

Mr. POPE, Q.C., called to address the Commission.

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My Lord, when my learned friends consulted together with me as to the course which we thought it would be convenient to take, we agreed that the better course, so far as we could judge, would be to

leave, as used to be the practice in the Courts of Chancery, the analysis of the evidence to one counsel, and reserve simply to the other counsel such general observations, either in the application of the evidence,

or in explaining the position of the parties in reference to the decree which was sought, as the only matter to which they would direct their attention, and that is the course which we propose to adopt now. We asked my friend, Mr. Pember, to assume the duty of the Chancery junior, and to lay before your Lordship and the Commission the observations which were necessary with regard to the evidence and its analysis, and I must say for myself that I thank him most sincerely for the industry and the ability with which he has discharged that duty. I certainly am a little apprehensive, myself, of the danger of darkening counsel by the multiplication of words without knowledge, and, therefore, I shall be very brief in such observations as I may make. My observations will rather be directed to placing before the Commission, on behalf of the companies that I represent, the view which they now, after the whole evidence has been dealt with and analysed, entertain of their position, and my object will be rather to contribute, if possible, to your Lordship's decision by explaining what that position appears to the companies to be, and I will endeavour, if possible, to aid your Lordship in answering the questions which are submitted to you in the reference.

My Lord, the questions themselves are clear but limited. I do not know that they are any easier to answer on that account, but a great deal of discussion which would otherwise be relevant, is excluded from our consideration. For instance, the general question of the acquisition of water undertakings by municipal corporations is hardly involved in the mere question of finance. Finance is after all only one ground upon which the acquisition may be desirable or undesirable. There are other considerations which have led hitherto the parliamentary mind rather to favour municipal enterprise, for instance, public health and so on, but all that I think I should do wisely to abstain from discussing. Speaking for myself, I think I should not object to subscribe to the general proposition that where an enterprise is carried on for the purpose of supplying a common necessity, and in its nature involving something of a monopoly, it may wisely be managed by the community upon behalf of the community. How far that proposition is capable of application, or ought to be limited, is a matter which, no doubt, is receiving some attention now, but is apart from our discussion, which is purely whether upon financial grounds, and in the interests of the ratepayer or the consumer, the acquisition of the London Water Companies by a public authority is desirable. I emphasise the London Water Companies, because one can conceive perfectly well that that which is applicable (and that would be one portion of my argument) to the municipal authorities throughout the kingdom, is not equally applicable to the circumstances of London. But the simple question, the first question which the Commission are required to answer, I may paraphrase, I think, by putting it more familiarly than is actually done in the reference, by saying you are asked whether it is worth while in the interest of the ratepayer and the consumer to acquire by purchase the London Water Companies. I own that I think myself, and I am bound to admit upon the part of the companies, that in the interests of the companies themselves they are estopped from asserting that purchase at a fair price would work any injustice to them. They, of course, consented when they agreed with Mr. Smith, and were acquiescent in Lord Cross's Bill, which was referred to Sir William Harcourt's Committee, they were acquiescent in the principle of acquisition at a fair price, and it is no use disguising the fact, my Lord, that this controversy has been embittered for years and still remains embittered by the rooted conviction on the part of the Companies that the London County Council neither wish nor intend to deal fairly with them. I cannot help saying that the policy which the London County Council has constantly pursued rather justifies the Companies in entertaining that suspicion. The constant harassment for the purpose of depreciation, the persistent insistence upon some special clause to regulate the ascertainment of the purchase price, and the general tone of uncertainty which they maintain even to the present hour, seems to me to show that that is really one of the cardinal difficulties in the case. On the 6th February, your Lordship will remember, you asked the London County Council to let you know what they meant—upon what terms they were willing to come under the responsibility of acquiring the Water Companies. I will only just refer your Lordship in one moment to what was said, and then you will see what information they really have given to your Lord-

ship upon the subject. At the close of the sitting on Monday the 6th February, your Lordship put to my friend a categorical question. You said, when we were discussing the question of the order of Counsel's speeches: "With regard to the order of Counsel's speeches, I have to say that the course most convenient to us would have been that we should have heard the London County Council first, because I confess I am not quite sure yet, although I have given great attention to the evidence, whether, for example, the London County Council desire us to find that purchase would be expedient upon any terms, for instance, of arbitration, or whether they want us to find that purchase would be expedient upon certain special terms of arbitration."

(Chairman.) That was only one difficulty. Were there not others?

(Mr. Pope.) I suppose so. At all events that suggested an answer, which my friend, in order, as he said, that he might not exceed in any way the authority of his clients, read from a prepared statement, so that there might be no doubt, but I must own, reading that, I am still left in doubt as to what it really is that the County Council mean. This is what my learned friend read to your Lordship:—"We would point out that the doubt which still seems to be entertained by some members of the Commission is, no doubt, due to the fact that, throughout the present Inquiry the object of the Committee has been, not so much to make one particular case, which they ask the Commission to accept, as to lay before the Commission all the information relating to the water supply of the Metropolis, which several years of experience have enabled them to collect, and upon which the Council's policy has been based. In order to enable the Commission to appreciate this policy, the committee have laid before them the decisions arrived at by the Council, and the specific schemes for the solution of the water question, which the Council has presented to Parliament. The Council's Bill for the purchase of the eight companies is now before Parliament, and it contains a special arbitration clause, which was the clause which was discussed before Mr. Plunket's Committee in 1895. This clause affords, in itself, the answer to the Chairman's question, namely, that in the opinion of the Council, it is expedient to purchase the companies, upon special terms of arbitration. With regard to the question whether the Council thinks that purchase is expedient, upon any terms of arbitration, we would point out, with the greatest respect, that, as the Council's definite proposal is now before Parliament, and the Council's witnesses may at some time be called upon to substantiate it before a Committee of the House of Commons, it is impossible for the Committee to say anything that might be construed so as to commit the Council to accept any terms of arbitration that might be imposed upon them; but at the same time the Committee wish it to be stated that, in their opinion, it does not necessarily follow that the precise clause contained in the present Bill affords the only means of obtaining fair terms of arbitration. The Council's view has been, that the position of the metropolitan water companies differs, in many respects, from that of similar undertakings with which Parliament has hitherto dealt, and its contention is, that the fair value of the companies' undertaking should be ascertained by a court of arbitration of the highest standing, with the fullest powers to inquire into all the circumstances of each individual case." My Lord, if you can make anything out of that except an evasion of the question which your Lordship put to my friend, I am unable to do so. The general claim that, because they have—or had—"have" would be too strong a word to use, after the events of yesterday—

(Mr. Balfour Browne.) The events of yesterday do not affect that Bill a bit in the world.

(Mr. Pope.) Yes, they do.

(Mr. Balfour Browne.) No, indeed they do not. That Bill is not to be read a second time till the 8th of April, and it will be, probably, after this Commission has reported.

(Mr. Pope.) But, however that may be, they do not even tell us now whether they would undertake the responsibility of purchase, supposing Parliament were to prescribe no special clause. They have again and again retired and said they would consider the clause, and so on, but their policy has evidently been rather to

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Mr. Pope. control the arbitrator, than to give him the free discretion which, we say, he ought certainly to have. I know the clause, of course. I very frequently have read it, and seen it and considered it, when it was before Mr. Plunket's Committee at the time, and I own I do not see any very grave distinction between the powers which that clause would give to the arbitrator, and those which he would exercise, and does exercise every day, generally, under the provisions of the Lands Clauses Act. But the objection to a special clause which does not control the powers of the arbitrator is that Parliament is supposed to mean something by all that it does; and if an arbitrator were to find a clause which, although it would not, in point of enactment, limit the discretion which he would otherwise have, it would be contended before him, and with considerable force, that the special clause having been enacted by Parliament, must mean something, and if it were possible to give it an interpretation in limitation of his authority, that would be the construction which would have to be put upon it. Well, my Lord, the first position which the companies take is this: They feel that their mouths are closed as regards purchase at a fair price, but that that fair price should be ascertained according to the ordinary rules provided by the law for the ascertainment of such prices in similar circumstances. I fail to know where my friend has shown any such difference in the position of the water companies, as justifies him in saying that special powers would be required by the arbitrator. The arbitrator would have absolute power, and would, as a matter of fact, take into consideration the whole circumstances of each particular case, if he were dealing with it under the Lands Clauses Act.

If my friend is really in earnest in saying that the Arbitrator should have the fullest power to inquire into all the circumstances of each individual case, the only way in which that could be accomplished would be to let the arbitrator alone. You cannot give the arbitrator special instructions without limiting his authority, without, in point of fact, curtailing that discretion which both sides profess to desire that the arbitrator should have, with a view to the accomplishment of a fair assessment of value.

Of course, my Lord, I should not contend that, if in the acquisition of the water companies there is some grievance to be redressed, if the shareholders of the water companies are in the nature of vermin to be exterminated, or if the directors of the water companies are really looking to dividends by the supply of what Sir Alexander Binnie called clarified sewage, they deserve any consideration. But that there is no such charge fairly to be brought against them, I think abundant proof has been given on all sides, although again one cannot blind oneself to the circumstances that the County Council do not think so. Only yesterday a report is brought up and debated in the County Council which goes to the extent of saying that the present supply of the Thames water to London is unsafe, and that it ought according to all logic be immediately abandoned. One wants to know really and especially in discussing this question of finance, what is the intention of the London County Council if they become the purchasers? It is obvious from discussion yesterday that the policy of the London County Council would be, if they become the purchasers, to proceed with the Welsh expenditure at the earliest possible opportunity so as to avoid, at all events, the supply of any auxiliary or supplemental water from a source which they say is polluted and improper. Although now we come to the undoubted position that permanently the existing supply must be maintained and that for 15 years—a generation and the lifetime of a generation—no other supply is, in point of fact, possible. I assume, however, my Lord, for the purpose of discussing the position of the companies that the price to be paid will be a fair and proper price for the companies, and I own further it seems to me that if once that is so and you secure, in the only way in which a fair price is possible, the value of the present income with a fair valuation for future prospects and a reasonable—I do not commit myself to 10 per cent. or any arbitrary amount—but a reasonable compensation for disturbance which in the case of an investor who looks to income rather than to permanent security of capital as the ground of his investment, becomes more serious than it otherwise would be, I do not see where there is to be any advantage, at all events, to the present generation either of ratepayers or consumers unless it can be made out of economy of management. If it can be

made out of economy of management, there may be some gain, but there is no other claim as it seems to me but that. I will not for a single moment interfere with the able discussion of my friend Mr. Pember upon the statement of evidence of Mr. Gomme and Mr. Haward. That has been dealt with and I shall not spoil what has been said by any observations of mine, but, in addition to Mr. Gomme and Mr. Haward, your Lordship will remember that very early in this inquiry Sir Alexander Binnie produced and read to the Commission a prepared statement which contained the reasons which he desired to give to the Commission, in favour of an affirmative answer to the inquiry. That will be found at question 1620. In order that I may show the Commission that in fact nothing else that has been discussed is claimed by any witness as an advantage for purchase, let us read what Sir Alexander Binnie had prepared and see how far those reasons bear upon the financial considerations and how far they are really outside the present inquiry. This was the question put to him by Mr. Mellor: "Suppose that the whole of the water companies were in the same hands so that they were worked as one concern, what are the advantages the consumers would get in your opinion?" This is Sir Alexander Binnie's answer, which as I say was prepared and read from a statement which had been considered. "First: it will put an end, once and for all, to the continual inquiries on the London water question which have been going on since 1811 carried out by 'Royal Commission and Parliament.'" Well, that strikes one as being perilously near the parable of the unjust judge whom your Lordship will remember granted the widow's prayer, lest, by her continual coming, she should weary him. But inasmuch as that is stated to have been the judgment of a judge who neither feared God nor regarded man the considerations which would influence his judgment, I think, are hardly likely to influence that of the Commission.

But suffice it for the moment to say that that is not finance. Therefore, that is a question that would have to be discussed somewhere else, and not in this inquiry. "At the same time it would carry out the recommendations of the Duke of Richmond's Commission, Sir William Harcourt's Committee, the inquiry before Sir Matthew White Ridley's Committee in 1891, and the recommendations contained in the Report of Sir Joseph Pease's Committee of 1896"—again not finance. "Second: It would place London in the same position as that which it has been found most expedient to adopt in all other large towns in Great Britain and Ireland, and which has been found most conducive to the public interest in the United States of America, and it is a duty which the Government of India places in the hands of almost all the municipal bodies in the Indian Empire"—not finance; but a discussion of the general policy of municipal enterprise. "Third: that according to all authorities on the subject—Lord Balfour's Commission, the recent evidence of the water companies, and the investigations of the County Council—the present water supply of London must be more than doubled within the next 30 or 40 years, and it is expedient that these new works should be carried out by some public body, and not by commercial companies. The present supply of water may be taken for the year 1896 at 198,000,000 gallons a day. The cost in capital expenditure 16,531,346*l*. Had these works—those are the works up to date—been carried out by the Metropolitan Board of Works and the Council, they would no doubt have been treated as the main drainage of the Metropolis has been treated especially when we regard the long period over which the expenditure has ranged. In the case of the main drainage works, since 1855 about 7,750,000*l*. of capital have been expended, of which 3,500,000*l*. have been paid off"—there stating the advantage which the provision of the sinking fund would be. No doubt upon that question there does arise a point for discussion, namely, the provision of the capital for future extension. The allegation of Sir Alexander Binnie's intention seems to me to be to assert—and it is worthy of consideration—that the provision of a sinking fund by a public body is an advantage, because it practically gradually diminishes the amount of indebtedness for the works; and further that the public body—I think he says so in the further part of that paragraph—would be able to raise the capital in the future more readily than the companies could do. To that extent the answer which Sir Alexander Binnie

gave seems to me to be relevant to our inquiry as to finance. "Fourth: As far as London is concerned, the County Council is the proper body to be entrusted with this work. The Metropolitan Board and the County Council have with great success carried out the other great branch of its municipal duties; namely, the main drainage of London, and so intimately connected with the health of the population are drainage and water supply, that it is most expedient that both should be placed in the same hands. From my experience of over 25 years, I can say that it is greatly to the advantage of the public at large that water supply should be in the hands of a public representative body, the interests of which are intimately connected with those of the consumers of water rather than in those of commercial companies, whose natural object is to obtain the largest possible financial return for their invested capital." "That public bodies can efficiently conduct water supply, is the universal experience of Great Britain, America, and India, and the success which has attended the main drainage of London, and the relief afforded to Parliament since the establishment of the Metropolitan Board of Works in 1853, is a proof that a public representative body in London can carry out the work of water supply, as it has carried out that of main drainage. Those, sir, briefly are what I consider to be the advantages of placing it in the hands of a public body." As I say, there is plenty of room for the discussion of a great many of these propositions, but it would not be discreet for me to enter upon them, because they are not relevant to this particular inquiry, which is, the financial result of the acquisition of the London Water Companies. Then if you choose to go on with the evidence of Sir Alexander Binnie, and to consider, not only the questions which were put by the Commission, but the cross-examination which afterwards I took Sir Alexander Binnie through—in fact, he is the only witness that I have cross-examined at any length in the whole of this inquiry—it appears to me that the conclusion is absolutely incontestable that for this generation there is no probability of any advantage to consumer or ratepayer; there is no probability of more water, or better water, or of cheaper water. On the contrary, the immediate expenditure which is contemplated by the Council would rather, as Sir Alexander Binnie himself says, "tend to an expectation that for a time, at all events, there would be an increased charge, and not a decreased charge." How far the benefit of one's posterity is a financial advantage, which should induce the present generation to incur an enormous expenditure, is not for me to say; but that the advantage would be absolutely *nil* to the present generation, or confined, if there be any advantage, to a future population, is perfectly plain if you read Sir Alexander Binnie's evidence from end to end. I think that it would be very much more consistent with fairness if the County Council and its Committee in their reports, instead of bringing up the bogey of typhoid fever and germs in the London water, would say, "Even under our own scheme we cannot contemplate, and we do not contemplate, any better water for this generation, any more water for this generation, or any cheaper water for this generation." That, however, leaves the question of the future supply of capital a matter for discussion, and I will address myself to that by-and-by, very briefly indeed.

Now, however, I assume that if economy of management is likely—I will not say it is possible—to effect a saving, then to that extent it would be an immediate advantage. I have already said that it is not anticipated by Sir Alexander Binnie, or any of their witnesses, because if there were an advantage, it must result in cheapening the supply, and nobody anticipates that there would be a cheaper supply for the present generation. But, dealing with economy of management, of course there are certain savings inevitable which I will deal with in a moment; but, speaking as one deals generally with the affairs of life, I have heard many advantages claimed for municipal management, but I never heard of economy as one of them; in fact, I should not expect that economy would be found, either in joint stock management, or in municipal management. I have always understood—at least I was taught in the early schools of political economy—to believe that if you want economy of management, you must secure individual interest in the application of the capital which is the life of the concern; and that is really true on the large scale. Where you have an industry in which the amount of capital necessary for the develop-

ment of a production large enough to be a paying production, there you gain the economy by having the small concerns and the individual management, just exactly as it is found by experience that in the great cotton industry of this country, the joint stock principle is not applicable. It has been applied and tried throughout districts in Lancashire as we all know. The co-operative principle has practically failed in Oldham, which is the great district for co-operative cotton spinning, and why? because there are none of the reasons which make the joint stock principle advantageous. There the command of capital by individuals is sufficient to ensure a profitable production, and there you secure the individual control, and the individual interest in the management. Where you get a necessity for an expansion of capital greater than may be convenient to the individual, or where you are dealing with an area larger than can be reasonably subjected to individual control, there the joint stock principle comes in, in some cases advantageously, because you are prepared to sacrifice some economy of management for the sake of the advantage of the expansion of capital and of enterprise. The joint stock management, I thought, was notoriously not so economical as the individual management, because, although in the joint stock company you may have directors absolutely and personally interested in the success of the undertaking, still there is not that amount of personal supervision and control which prevails in the individual concern. So again one finds it—nobody knows better than my friend—in our great railway system. Of course, that is a joint stock enterprise; but everybody knows that although the large board of directors is useful in the minor details of administration, in the making of coal contracts, or some minor matter of that kind, the administration of the companies, the policy of the companies, is determined, and is carried out, and is worked by the chairman, the solicitor, and the general manager, getting as nearly as possible to the individual control, and to the personal interest in the concern which is essential, as it appears to me, for real economy in the management.

When you came to municipal management it is still more likely to be wanting in the elements of economy, because the members of the committee charged with the particular administration of the particular department are not personally interested in it. It is only happily the general sense of public duty which induces parties to consecrate their time and powers to the public service in connexion with such administration, but of necessity there is wanting one of the elements for real economy in the management; and therefore I should not expect, as a matter of common expectation, that the management of the County Council could be as economical as the management of the company (in the general administration there may be certain savings) or certainly the management of the company as completely and absolutely economical as the individual control and management of the individual concern. I am bound to say that the evidence which has been given has been highly creditable to the economy of the management of the companies. Mr. Stoneham, whose evidence was quoted by my friend Mr. Pember yesterday, certainly, in reference to all the companies, and notably in reference to the New River Company, gives the highest credit to their care and economy in their management, but of course it is a joint stock company, and every director possibly is not as diligent and self-sacrificing as the individual managers would be. But there are certain matters, undoubtedly, which have over and over again been suggested as points of economy; you would save directors' fees; you would save some fees in regard to collection and various matters of that kind, which, if you did, would of course be to the credit of the management. But what would that amount to? I see by Mr. Lass's table the total expenditure of the London companies in directors' fees is 27,225*l.* out of 153,500*l.*, which Mr. Lass gives as the total expense of management. Now, supposing you save that 27,225*l.*—I do not think you would, and I will point out in a very few minutes why I think so—but supposing you did, *per contra* you would have the sinking fund to be paid out of the revenue or out of the rate, as it might be, and on the balance you would have no economy at all. In regard to the collectors I will not say another word. My friend, Mr. Pember, dealt to some extent with that, and I think it is sufficiently dealt with in his speech. But, again, I agree with him in this that I do not think that we have sufficiently realised the importance of the size of the proposed new undertaking, and therefore the

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practical—I was going to say the physical impossibility of overtaking the work necessary for the management of such an undertaking. Its size would be enormous. Now I am content to illustrate what I mean by comparing the Corporation of Glasgow, for instance, and its management, which seems to me to be a specimen of the best municipal management that could be quoted in their favour. It is a highly ambitious corporation—water, gas, tramways, and now I suppose telephones are all falling into the capacious municipal maw. Whether it will go any further than that in the acquisition of private enterprise I do not know, but I quite agree that Glasgow may be regarded almost as a model corporation, possibly largely because the traditions of that corporation as an ancient Royal Burgh makes its offices an object of greater ambition to the higher class of citizen than perhaps the ordinary municipal offices do. There it is. But what is Glasgow? In Glasgow the water trust is a separate corporation from the Corporation itself.

I do not know why that was so in the first instance, but I suppose it is because it enables them to bring the whole power of the Corporation to bear upon the water administration, instead of that of merely a committee of the original body. However that may be, that is the state of things. But what is it that they administer—they administer it well I agree—an area, the population of which, and the water supply of which, is not larger than the area of the Southwark and Vauxhall Company which I represent here, and far less than that of the New River Company, which is the most ancient of our water companies in the Metropolis. Multiply the duty of the Glasgow Corporation by seven, and what becomes of the possibility of dealing with such an unwieldy undertaking as that? Indeed, I should doubt the physical endurance of a Committee of the London County Council to undertake that in addition to all the other duties which are cast upon it. Then, how is it to be dealt with? This question of size is not without importance—and I am justified in pressing it as a matter for the most serious consideration—for showing that even the largest—Glasgow being the largest—of our municipal authorities affords no comparison with the work of management which would be necessary to manage this entire undertaking. At this present moment, there are other matters which are requiring attention in London, and under which economy could be made by concentration just as with this, and yet, as we all know, at this moment keen discussion is going on as to whether it is not better to divide London into some separate municipalities, and even to give the London County Council power to transfer to one or other of these separate municipalities, if they desire it, some of the work which they find burdensome or which they can dispense with for themselves. If the general government of London is so large that it is not thought desirable that it should be confided to one homogeneous body, why is the water supply any more than other matters which are to be dealt with capable of being so administered? In truth, one cannot help feeling that it would be an experiment and that we might be liable to the same disappointment which is the lot of many inventors, when they find that the result which is obtainable with certainty in the laboratory, is hopelessly uncertain when it becomes multiplied to the extent which is necessary for the manufacture or works. I do not think that you can form any conclusion by reason of the efficient management of the waterworks by a corporation like the Corporation of Glasgow for saying that any ground is laid for the belief that the management would be economical or would be possible in the hands of a single body by a municipal authority. If that is true of all public bodies, how much more of the London County Council committed up to the eyes as they are to a policy of expenditure? It seems to me impossible to doubt that the result of a transfer to any central authority—more than all the London County Council—must result in the management mainly being left in the hands of officials highly paid, because highly trusted, if so, where is the saving on the directorate? Why, surely half a dozen highly paid officials would swallow up the sum which is to be saved from the modest fees which the directors from time to time draw long before the payments themselves would be exhausted.

Therefore, my Lord, I start with this, that the view of the companies is—If acquired by any authority at a fair price conceded almost on all hands, no profit to the present generation at all events. And if no profit it is hard to see that it is worth while unless there is economy of management, which is not possible, by

reason of the enormous character of the work to be undertaken. But I confess the impression upon my mind of the evidence which has been brought before you seems to me to tend in that direction. No immediate profit, and therefore no immediate justification upon financial grounds for the purchase of the companies, irrespective of other grounds of course. But there is that suggestion which Sir Alexander Binnie made, namely, it may be that in the future supply of London the public body would have the advantage in raising, easily and freely, capital required for such extension—more easily than the water companies—and if the inclination of the Commission is ultimately to the necessity of going elsewhere for water, it does seem to me then that there is a grave question for consideration. If, for instance, the County Council are right in saying we must go to Wales, and not extend in the Valley of the Thames, then that is a duty which is cast for a scheme applicable to the whole, and not to any particular one of the companies, applicable to the whole of London. I own it seems to me that it would be impossible for any one company to undertake the duty of raising the capital to provide for such a general extension. Of course in proportion as you come to the conclusion that the necessity for the Welsh scheme becomes remote so much less forcible does the point become. If it is necessary to go to Wales, then it does seem to me frankly—and I think the companies would fairly admit that—there is some necessity to provide for the raising of the capital which is necessary in order to bring such a supplemental supply. That has been in a minor degree already discussed before the Commission. The same sort of question arose, of course, upon the inter-communication question. The main difference in the position of the companies now from what it was at any former time, seems to me to have been well pointed out by Sir William Hart-Dyke whose evidence, I think I may say, received the assent of all the companies whom I represent, and it certainly carried my conviction along with it. It will be worth while, perhaps, that I should ask your permission, because I shall not occupy very much more of your time, to refer to that evidence of Sir William Hart-Dyke, which is at question 28,151. "I have been listening," he said to your Lordship, "to a very great deal of evidence, my Lord for some days, and I should venture to urge that the whole position on the question of purchase, has undergone a considerable change even during the time that this Commission has sat. I venture to urge that the whole policy of the future as it has been disclosed here under the evidence—and chiefly under the evidence of their officers—has shown that the policy of the companies has been to cover a very large amount of ground as regards not only present water supply in the Metropolis, but as regards future water supply or prospective supply as it is mentioned in the terms of your reference." One thing I think is clear, that the experience of last year satisfied every company that it has a duty to the whole as well as a duty to its immediate constituency, and for the first time the companies came together with a view jointly to do that which might be necessary for the relief of one as a duty, which was incumbent upon the whole as representing the whole water supply together. "I think it can be proved, and I think will be proved before the inquiry is over, that these companies have shown that their policy is not a standstill policy, but that they have been spending, and are now proposing to spend, a very large sum of money as regards prospective supply. I believe I am right in saying that if the different sums are added up which the companies proposed to spend to absolutely secure a constant supply in the future, they will be found to amount to something like 15 millions of money of which the company of which I am only a humble member, the Kent Company, proposes to spend a million and a half of money with that object. But, of course, the sum we propose to spend is nothing like what other companies are incurring, because we have no question of storage to deal with, which as your Lordship knows is a very expensive matter. Then in addition to what the policy of the companies is as shown before you, we venture to think that the companies themselves have within the last few days, taken a step which has, I will not say revolutionised the position, but has made an immense change in the position as Parliament has to deal with it to-day. What I venture to say is, we want to strip altogether from our minds the cries which have been raised against these

"companies in the past. I do not suppose any body of men have been better abused for many years since I have been in Parliament, and long before I was a director, than these water companies. There has been hardly any name too bad to call them by. To make full allowance for all that, I venture to think that the step now taken by the companies with regard to this inter-communication scheme is one of great value for the consideration of Parliament. I believe it is the first time in the commercial history of this country that any commercial undertakings of this kind have voluntarily been placed in the hands of a Governmental Department, such as the Local Government Board. I do not believe there is any precedent for it, and I think that the evidence of one or two of my friends has shown that some of them are not quite aware of the extraordinary powers under this Bill which they voluntarily introduced, and which they are placing in the hands of a public department. The department will have almost unlimited powers as regards inspection with a view to secure, not only present, but future supply, and not only inspection but unlimited command of expenditure, that is to say, within any possible expenditure which may be sanctioned by Parliament. I believe the Local Government Board, under our inter-communication scheme and the Bill of the Government, as representing your Report, has practically a free hand as regards expenditure, and it may come down upon any company, at any moment in their career, and say, Now, gentlemen, you are not doing your duty as you ought to; there is a danger here, and there is a danger there, and you must at once spend half a million of money to secure future, that is to say, prospective water supply. Then, although it is perfectly true that your Lordship, in your first Report very properly reserves this Report entirely *ad hoc*, that is to say as regards an inter-communication scheme, which is to meet all emergencies, such as the grievous drought of 1898, and of course it is perfectly right, no doubt, that the strongest reservation should be given in that respect; but the other portion of your Report points to a very great change with regard to the position of the companies and the consumers, as it seems to me. It says: 'In order to satisfy those conditions,' that is to say as regards water supply, 'each company becoming a member of such combination,' that is to say, a combination, such as under this Bill of the companies, 'should either be at the time in effective possession of a supply of water materially larger than would suffice to meet the maximum daily demand of its own district during ordinary years, or else the works necessary in order to furnish such company with a surplus should be included in the scheme of connexion,' that is to say, under the pressure of this outside body."

I think I do not misrepresent therefore the companies in saying that they are sensible that in assenting to that they have, to a certain extent, assented to a principle which may be carried further than mere provision of capital for the inter-communication scheme, and speaking for myself it seems to me that a very small and limited extension even of the provision of the Bill for the inter-communication scheme, would meet the whole question of the future supply, and the whole question of provision of capital. The Staines reservoir scheme is a joint scheme voluntarily entered into. I can say, and I do not think there will be any violent resistance upon the part of the companies, that the same principle which would bring the Local Government Board to bear upon the companies in the event of a necessity for inter-communication, or in the event of a necessity as Sir William Hart-Dyke points out, for a further supply in connexion with their own adventures, might be brought to bear so as to create such a combination among the whole of the companies as really exists among some of them with regard to the Staines reservoir scheme. There would be no great necessity for such interference if the future supply of London is in connexion with the Thames Valley, for the simple reason that in the Thames Valley where each company is, there is no doubt that it would be able to overtake any demand made upon itself for an increase of its own supply either by combination as in the case of the Staines reservoir scheme or by raising its money alone, and even if there were a necessity for the raising of capital for the purpose of going elsewhere—which of course, on the part of the companies, we strenuously deny—even in that respect, the intervention of an outside authority might be used

to compel such a combination among the companies as would certainly create a security for the raising of money which would be abundant for the purpose of any such general supply. I am not in a position, of course, to say that the companies have proceeded so far as to give a careful consideration to the details of any such scheme, but I am at liberty to say that in considering this inter-communication scheme, they have also considered the extension of its principle to the necessity of future supply, whatever that might be, and if that be so, then I think myself, the last remnant of a financial reason for the purchase of the companies may be said to be disposed of. If there is to be no profit, no cheaper water, no better water, no more water, no advantage to the consumer, no advantage to the ratepayer of the present generation, and the future supply can be provided for without the necessity of purchase, then the disturbance and dislocation of all the relations which have grown up during the years of the existence of the companies would be avoided, and the whole advantage of a combination among the companies to do that which is claimed to be only possible by some central authority, would be accomplished at the same time. I say the disturbance of old relations—and one must not forget that these water companies have grown up with London, and have been created and helped to create London as it is. What would London be, for instance, if the New River Company had not found adventurers two centuries ago, to bring a supply of water to London? All those municipal authorities who are now so keen to take away property which has been created when it becomes prosperous have had the opportunity for many many years to become themselves the suppliers of water, and have never availed themselves of it, but have parted with their birthright to the adventurers whom now they seek to buy out at a price which is not commensurate with the value of their undertaking. I own that it seems to me that the water companies deserve very great and grave sympathy, and that only in the last resource, as Sir William Hart-Dyke said, ought they to be compelled to part with property which they have carefully built up, and created and made beneficial to the community. If in the last resource, Parliament thinks it necessary to hand them over to a central authority, as I have already said, for a price, be it a fair and proper price, the mouths of the companies seem to me to be closed in the face of the public necessity, but without the public necessity, and especially when I venture to think my friend has demonstrated that financially it is not only not a necessity, but would be a burden to the community for many years to come, I suggest that the step ought only to be taken with the very gravest and greatest reluctance, and especially if the only ground upon which I have felt oppressed in any way as regards the future, namely, the provision of capital for an undertaking covering the whole of London, such as that of the Welsh scheme, or any supply of water from any other source which would cover the whole demand, can be dealt with upon the principle of contribution and the principle of combination which has already received the approval of the Commission, provided it be extended a little in order to cover the additional ground.

My Lord, that is the view of the companies. Purchase only in the event of great public necessity—the necessity must be clearly proved. They are willing to come under such control and such terms as regards the future supply, and the future of the capital necessary for the purpose as may be necessary to enable them in combination to do that which they may not be able to accomplish singly.

As regards the general question of what the authority should be, which is one of the questions submitted to you, I have really nothing fresh to say, except that the very worst authority to whom it could be committed, appears to us to be the authority of the London County Council, because they are an authority who are committed to a particular course, which may or may not be the best, but which we have no means of inquiring into or dealing with before the present Commission.

As regards general control, I am authorised to say, that in the event of the water companies remaining undisturbed, further control so far as is necessary to secure publicity to all their doings appears to us to be fair and reasonable. It does seem to me to be quite unnecessary for the water companies to contend that they should maintain any secrecy as regards their operations, either as regards pumping or any of their other works. If it is desirable that the public should be informed as to what takes place and the results they

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Mr. Littler. accomplish, by all means have a power—if it does not exist—to compel them to do so.

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My Lord, that really is all that I think it necessary to say, because of course, I pray in aid of what Mr. Pember has said, and I have not said one single word which goes over again the ground which was taken by Mr. Pember for I adopt for all the companies that which he said as being relevant to our case.

(Mr. H. W. Cripps.) Mr. Pope, I hope you will allow me to apologize to you for not having heard the beginning of your speech. I had never been informed and had not the least idea that we should meet at an earlier hour this morning, or I should have taken precious good care to have been here.

(Mr. Pope.) You are very good to say so.

(Mr. H. W. Cripps.) You know I should appreciate anything you said very much, from the associations of former days.

Mr. LITTLER, Q.C., called to address the Commission.

My Lord, I appear, as your Lordship knows, for the Kent Company, which occupies a different position from the other companies in a very large number of respects.

(Chairman.) Mr. Littler, some members of the Commission have a scruple about hearing you, inasmuch as you were a witness in the case, but I have pointed out that you were a witness for the county of Middlesex only, and that you now appear merely for the Kent company.

(Mr. Littler.) Absolutely.

(Chairman.) And your observations will be limited to that company.

(Mr. Littler.) I do not propose to say one word for the county of Middlesex. It was necessary that I should speak for Middlesex, because it so happened there was nobody else connected with the county who could give the same information to the Commission, but I expressly declined to say one word for the Kent Company, your Lordship will remember, then, and I entirely confined my remarks to the county of Middlesex. I am not in the least degree concerned here now with what the county of Middlesex may say nor shall I say one word about them except to point out that they with the rest outside are dissentient authorities. I just simply mention their name. I mention it now, and that is the only reference I propose to make to them. I should not dream of such a thing as that. Of course, there was a difficulty, your Lordship knows, because this Commission is not quite like a law court—there was a difficulty in the position as I felt at the time, but I sedulously endeavoured to absolutely confine myself in what I said to the county of Middlesex, and now I shall sedulously confine myself to the water companies and not say one word about any other interests that might be affected. I do not propose to do so at all.

Now, my Lord, I confess I am very reluctant to trouble the Commission at all, but for the fact of the difference of position of the company I represent, and moreover, of course, this is a matter of the very gravest importance. I cannot help thinking, in regard to the proposition which I shall submit, of course, arguing as counsel, that the fact that I have had the opportunity of being counsel in different positions—namely, that I had to attend the Water Inquiry of 1880 on one side, and had to maintain the sinking fund clauses for the City in the interval, and the fact that I now appear again on the side of the water companies, ought to be proof that I know something about it, looking at it from both points of view; but I shall present to you as shortly as I can those particular considerations which affect the Kent Company, incidentally, of course, mentioning one or two things, but mainly confining myself to the questions as they affect the Kent Company, and one other question which my friends, Mr. Pember and Mr. Pope, left advisedly, namely, to draw your attention a little bit more fully than they have done—in fact, Mr. Pember did not do it at all—to the question of Arbitration, and how the Arbitration should be conducted, so as to see what its probable results will be.

Now, my Lord, that is really all that I propose to present to the Commission, and I shall do it as quickly as I can, consistently with presenting what I think is fairly due to the Kent Company.

Now, my Lord, I would begin by drawing attention to the exceedingly different position in every respect which the Kent Company occupies from that of any of the other companies. In the first place, it is absolutely and entirely a local company. I will just draw your Lordship's attention to who constitute the controlling authority of the Kent Company. Your Lordship has had before you the right honourable member, who has so long and so ably represented his county, Sir William Hart Dyke. Then we have Mr. Bolton, the Deputy-Chairman, who is another Kent resident. Then we have another Kent resident, Mr. Browne. And then we have—which is rather important in this point of view—Mr. Marchant, who is a local solicitor of considerable standing, and who is Vestry Clerk for the parish of St. Paul's, Deptford, in which we have no less than 100,000 supplies; and therefore he is immediately in contact with consumers, and would very soon come to have some knowledge if there were the least ground of complaint in the action of my company. Then we have Lord Stanhope, who is, of course, well known as a man belonging to the county. Then we have, as Sir William Hart Dyke said, Mr. John Penn, the great engineer, who has his enormous works at Greenwich, and is in immediate touch with the whole of that district through his workmen. Then we have Mr. Bradshaw, who is Deputy Chairman of the London, City and Midland Bank, and therefore a person well skilled in financial affairs. And lastly, and not least, we have Sir Henry Fowler, who has filled such distinguished offices of State.

Now, my Lord, those are the gentlemen who have considered this matter, and who have instructed me to lay their views before you with regard to this matter; and they are distinctly and clearly of opinion, one and all, that purchase cannot be of any financial advantage to the ratepayer; but, on the contrary, if their company is fairly and properly treated by the arbitrator, they think that it must be an absolute disadvantage to the consumer.

Again, my Lord, we have another circumstance which is worth consideration, and that is, that, with the sole exception of the London County Council, not one single local authority in the whole of our district has anything to say, but that they are absolutely and perfectly satisfied. Our area consists of 30 square miles within the County Council district within the county of London. It consists of 149 square miles beyond the county of London. We have Dartford Rural, which is against any alteration, and Bromley, which is, again, against any alteration. We have the County Council of Kent itself absolutely against any alteration. And we have Beckenham and Dartford and Beckenham Rural, which is the only one which says it would like an alteration; but it strongly objects to London being the local authority. Therefore, my Lord, there is a consensus of opinion that that which is being done is the best for the consumer. Of course, it is very easy to bring a string of figures here on one side; and I admit, on the other, showing certain hypothetical results which are going to accrue; but, my Lord, when you have persons who, all of them, have had their attention called to this matter, year after year, time after time, and who all of them are of opinion that there should be no alteration whatever in the existing status, it is surely strong evidence, what they themselves think, and what they have formed as their judgment as to the result of any alteration which may take place. We have, at the present moment, this strong consensus of opinion, because of the condition of things which Sir William Hart Dyke illustrates, and the change, the enormous change, that has taken place since 1880 in respect of facts, and the knowledge which has been acquired since 1880.

Now, my Lord, everything, as your Lordship remembers, in favour of purchase is based on the report of Sir William Harcourt's Committee. I venture to say with regard to that, that although Sir William Harcourt's Committee did report on the question of purchase, the only inquiry into which it went was whether the particular purchase on Mr. Smith's lines was a proper one, and that was the only issue which was then a live and an active issue. It is true that that Committee did, if I may say so respectfully of a Committee of Parliament, take upon itself to report more than what was required of it, because I have looked carefully through and refreshed my memory with the Report

which I have in my hand here of the evidence of Sir William Harcourt's Committee, and I find there was no evidence adduced with regard to the question of purchase pure and simple. The only evidence upon it was that of Mr. Edmund James Smith, who was examined and cross-examined at very considerable length—in fact, it is generally supposed that his disappointment with regard to that matter hastened his end, and the whole evidence that was really of any importance on the matter of purchase beyond Mr. Smith's was Mr. Stoneham's and Lieutenant-Colonel Bolton's. Mr. Smith, of course, had a foregone conclusion with regard to it, and there were those two public witnesses called, Lieutenant-Colonel Bolton, who was then Water Examiner, and Mr. Stoneham, but they were not examined on the question of desirability of purchase in itself. It had been assumed, that as Lord Cross had in 1879 determined on purchase, purchase must result, and on that occasion the water companies did not call one single witness. There was not a single question asked of any water company because—

(Mr. H. W. Cripps.) They were joint supporters of the Bill, in fact.

(Mr. Littler.) Of course, I was going to point out that they were supporters of that Bill, because they had agreed a price. They had agreed to be bought on the terms which Mr. Smith had propounded. I happen to know that one or two of them were not particularly anxious to be bought on those terms, but they all came in—they had all accepted the matter—and, therefore, they could not oppose Mr. Smith's terms, and no other terms were before that Committee. There were no terms whatever except Mr. Smith's terms, and the question was whether they should or should not be accepted. But on that the Committee, without having an inquiry—I say any inquiry at all, but certainly not any inquiry that would be worth a fraction for forming a judgment on—came to the conclusion that it was expedient that the supply of water to the Metropolis should be placed under the control of some public body, and they also found, in the entire absence of evidence, that there would be greater efficiency, economy, and equality of charge which might be secured, and “that the defects in the present provision for the extinction of fire might be remedied, and better provision might be made for the health of the community.” Now, there was not a rag of evidence for any single one of those propositions, and yet that was reported by that Committee. Then there is the long paragraph, which has been read over and over again, with regard to the desirability of obtaining a trust in the absence of a single municipal body, and I point out that that absence of a single municipal body exists at the present time, because the County Council of London does not control one-third of the water area, and now only has about four times the population of the outside area, which population on the outside will eventually exceed the population of London itself, and, according to the evidence, within the time of the next 40 years. Then, my Lord, there was that odd paragraph, which again was not supported by any evidence, that “for certain purposes at least it would be desirable to acquire the undertakings of the existing companies, if the same could be obtained on fair and reasonable terms.” Then, my Lord, although I may have to refer to it later, yet, as I have got the book open before me, I may say there is another singular paragraph in that report, namely, paragraph 7, having regard to the evidence which has been given here that the Stock Exchange value is no criterion whatever. The report of that Committee was that, “as a general rule, the market value of stocks of this description affords the best estimate not only of the present but of the prospective value of the undertaking.” Those are the conclusions which were arrived at by that Committee, as I venture to say, on an exceedingly insufficient amount of evidence.

Now, my Lord, the question of course and the first question of all on this question of purchase, mainly depends upon one matter, which even your Lordship is not unfortunately quite in a position to form a judgment on, because for obvious reasons inasmuch as it might be that the Commission might report in favour of purchase, your Lordship, when the County Council witnesses excused themselves, at once recognised the validity of their excuse, and agreed that they were not to say what in their view was the true value. If that is the case with the County Council *a fortiori* it is the case with the companies, because if any statement is made as to possible value (I am going to make some but with the strongest reservation that I am simply

pointing out some—not all—of the matters which may be claimed) if that is the case with regard to the County Council that they consider themselves not in a position with due regard to the interests of those, whom they represent, to tell you what the total amount would be, spread over the eight companies *a fortiori*, none of the eight companies ought, to use the Scotch expression, to condescend on particulars with regard to the sum which they think would be a fair sum to represent their own individual amount, because if they did, the result of that would be that it would be quoted against them and it would be urged that what they had suggested here was inconsistent with what they may be advised to suggest when they have had an opportunity which, of course, they have not yet had, of going carefully (and it would be a very costly process) with their professional advisers into the examination of their position.

Now, my Lord, there is just one general observation which I should like to remind the Commission of before I go into any more detailed consideration of the matter, and that is so as to get rid at once of that which I do think is the very unfair amount of prejudice that has been introduced here, that is with regard to the capital expended. I cannot help thinking, my Lord, that the professional advisers, at all events of the London County Council, must know that that is not what purchase proceeds upon. It does not proceed upon capital expended, but it proceeds upon this one sole question, what is the value to the person who is selling the undertaking of that undertaking, to him, on the day of the notice to treat. If it has cost him 20 millions and it is worth to him, not to the purchaser, but it is worth to him only one million instead of 20 millions, he can only get one million for it. It absolutely is an immaterial matter and except where it is only by ascertaining what a thing has cost that you can arrive at the value, it is scarcely an admissible consideration at all. The question is as the thing stands at that time, what is the value to the then owner, and that was all entirely gone into in a case which I am sure, when I mention it, will be familiar to your Lordship from old professional days—I mean the case of *Stebbing* against the Metropolitan Board of Works. That case made it absolutely clear that it did not matter what was the value to the purchaser, whether it was much or little, it did not matter what was the real value of the property, the question is, what is the value to the person who has to dispose of it? That was illustrated by the facts of that case, which were as follows: A clergyman had the freehold of a burying ground vested in him, and that burying ground, if it had not been devoted to ecclesiastical purposes, would have been of enormous value. The ground, freed from restriction, was of enormous value.

The incumbent, Dr. *Stebbing*, argued against the Metropolitan Board that he was entitled to the value of the land. No, said Lord Chief Justice Cockburn and the rest of the Queen's Bench, you are not entitled to the value of the land; you are entitled to the value of the land to you. Therefore, he was held to be confined to the emoluments which he received from his duties as clergyman in reading the burial service, and the fees which he received in respect of the burial of corpses. Therefore, to inquire as to whether or not we have had any amount of—if you like to say so—misused capital, and of foolishly spent capital, or, if you like, of any quantity of obsolete capital, is really trailing a red herring across the path of the Commission, if I may be allowed to say so, because that is not the question that any arbitrator would allow to be decided.

(Chairman.) Not an ordinary arbitrator under the Lands Clauses Act, but the London County Council say that the arbitrator ought to have power to go into that question, and to do what Parliament would do in the matter if they were dealing with it.

(Mr. Littler.) Then, my Lord, if that is so, does not that settle the fate of purchase altogether, because if he is entitled to consider any other value than would be given under the Lands Clauses Act, you would be increasing the dangers of arbitration altogether.

(Chairman.) No. The suggestion of the London County Council was: You have got a pack of obsolete capital; just such capital as was struck out of the account in 1852; if Parliament were reviewing your capital now, it would repeat that operation, and strike so much off your capital. The arbitrator ought to be able to deal with that contention as fully and effectually as Parliament can, and to strike out that

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from your capital, and, therefore, they say, that you have so much less income legitimately received now.

(Mr. Littler.) You mean with regard to the 10 per cent. dividend—earning the full 10 per cent.

(Chairman.) Yes. the 10 per cent., and paying off your back dividends.

(Mr. Littler.) Then that is another thing. I was not going to deal with that question now as to "as fully and effectually as Parliament," because that is another and a separate branch of the subject. I am now dealing with what would be the ordinary thing. I am going to deal with that very clause, and there is not a more extraordinary clause anywhere. I cannot concur with my friend Mr. Pope that that does not do any harm.

(Chairman.) You need not argue what the effect would be under the Lands Clauses Act.

(Mr. Littler.) I will do that first and then come to the other. Under the Lands Clauses Act there cannot be a doubt that that is what would be the position. But, in passing, because that has led me to it, so I should like to get rid of that, and not only for now, but when I come to argue their proposed clause, what they call the "Plunket Clause," and to draw your Lordship's attention to one answer, and one answer only, of Mr. Stoneham's. Your Lordship will find it at Question 14,093. I am going to refer to it, and so I just give your Lordship the reference.

He says: "The capital of the companies represents a fairly going concern in working order."

Now, my Lord, it seems to me that a gentleman in the position of Mr. Stoneham saying that, disposes of all these allegations with regard to the question of capital, and makes it the more inexpedient that any such clause as the clause in their last Bill—which they repeat in their Bill of this year—should be admitted.

The next question, of course, is one which Mr. Pope has dealt with, and that is one which I should just like, as it is the foundation of all compensation—and as I am dealing with the Lands Clauses Act—to remind your Lordship of. Although, of course, it is an elementary proposition that I am stating, I think it is right just to state it as it is the foundation of the argument. The only right, apart from power (because I am dealing with right as accepted and recognised by all just countries) which the state has to interfere to take away private property, apart from despotic power, is the right which is given to it by reason of there being a public necessity which cannot be otherwise met. Unless that is the case, the State has no right to interfere and to take away from anyone, against his will, his private property; and, unless there is that public need, and a pressing need, then that ought not to be done. Now, my Lord, to show how true that is, just look at the reason which is given for these Acts, which govern the acquiring of property. The reason which is given why no action will lie, and why you are forced to arbitration, or compensation as it is called, is, because the Act of the State has made that lawful, which would otherwise be a trespass, and certainly the State will not make anything lawful which would otherwise be a trespass, unless there was *reasonable public necessity*. To take property, unless for real public purposes, which cannot be met in any other way, is the act of a despotism and not of an ordinarily free country. If you find that that property which you are going to take away is property which has absolutely been created by Parliament itself, surely the argument is *a fortiori* that Parliament ought not to interfere and take away that property, unless it is absolutely necessary that it should do so. Now, my Lord, although this is perhaps almost beyond the reference, it is not beyond the reference for one reason, and that is, that when an arbitrator is considering what is the value which he should give, he necessarily considers the position of the two parties. He considers on the one hand—and that is recognised in the Artisans Dwellings Act, as your Lordship knows—any sort of misbehaviour on the part of the person who owns the land, and under the Artisans Dwellings Act he has been specifically deprived of prospective value or of anything which comes within the ordinary term of compulsory sale, simply because he is considered to have misbehaved to the State, and to have not deserved any consideration with regard to his property. Therefore, I say that establishes the proposition that where a man has not misbehaved he is entitled to the highest possible value.

(Chairman.) The allotments case is nearer to this, of course.

(Mr. Littler.) The allotments case is nearer to this, but your Lordship knows the allotments case was under very special circumstances, because the allotments were not for the purpose of carrying on a profitable business; but the allotments case is very much more analogous, I venture to think, to the imposition of the poor rate. It is something which is done which makes the man contribute actually for the benefit of his own parish. Now what the Act of Parliament did in 1845 was this. The Act provides for what? The gentlemen on the other side all seem to think that there is some special value in the word "compensation"; but the Lands Clauses Act is to apply by Clause 1 to every undertaking authorised by any Act which shall hereafter be passed, and which shall authorise the purchase or taking of lands for such undertaking. Here, of course, they take the lands, which constitute our works. In addition to that, lands are defined to mean "messuages, lands, tenements and hereditaments of any tenure." When we come to the enacting sections, your Lordship will find that the word "compensation" is used alternatively for something else. For instance, in clause 9, it is "the purchase money or compensation to be paid." It is simply the purchase money ascertained in the particular way which is provided by the Lands Clauses Act. It is "the purchase money or compensation to be paid for any lands to be taken, and the compensation to be paid for any permanent damage or injury to other lands." But, of course, we do not need to trouble about that. Here, it is the purchase money or compensation to be paid. Then, as your Lordship knows, the Lands Clauses Act is a sort of code, and has a sort of little introduction to each set of provisions, and when you come to the purchase of lands otherwise than by agreement, that "with respect to the purchase and taking of lands otherwise than by agreement," it says, "Be it enacted as follows:—the purchase and takings"—and then, when they come to the notice to treat, they say the promoters are to give notice that they are willing to treat for the purchase thereof. That goes on—without troubling your Lordship to go through every set of sections—all the way along. There is one especially, I think section 49, if I remember rightly, which is worth just noticing in passing. That is the one which provides that, if they are required to do so, the jury shall find a separate verdict for the "sum of money to be paid for the purchase of the lands required for the works or of any interest therein, and for the sum of money for damage or severance." So that your Lordship sees that in the 49th section it is express that they are to deliver a verdict for the sum of money to be paid for the purchase of the lands acquired. Now that is all that is proposed to be done here. To find the money for the purchase of the undertaking—the lands—your Lordship will remember that it has been held by the courts in rating cases that the occupation by the pipes of the water company is an interest in land, and is rateable as such—it is an occupation of land. Again, you find when you come to the application of the compensation, it is spoken of as the "purchase money or compensation." That is in the preamble to section 69 and the following sections; so that it is always and throughout treated, as we think it ought to be treated, as purchase money. In dealing with it as purchase money, surely it is reasonable that we should be treated here just as everyone has been treated up to the present time with regard to any interest which has been compulsorily taken from him. I speak subject to correction, because, of course, we do not, any of us, know all the precedents; but I believe I am right in saying that there is no instance where there has been a contest before a Parliamentary Committee—it may have crept in where there has been no contest—but where there has been a contest before a Parliamentary Committee, I believe there is no instance of a water company being purchased, or a gas company being purchased, except under the provisions of the Lands Clauses Act. Now, if that has been found to be the proper system for all the purchases which have taken place since 1845 up to the present time, of whatsoever description of property which is taken by compulsion, then why is a new principle to be applied to this case where, as I have mentioned to your Lordship, Mr. Stoneham, the Government Auditor, says, that there is nothing exceptional in the case, but that the property fairly represents a going concern, and that the capital is in a reasonable condition. If that is so, why is this sudden change to take place except for this reason, that they know that if we get the true value of our concern, whether it be gauged by the market value of to-

day, or whether it be gauged by the valuation of a number of years' purchase on property, so well secured as this is, they dare not go to their constituents to ask to buy it at all; and it is only because of that that they want to have an alteration. It is simply because they know that. Of course they admit themselves that the Stock Exchange market value would not do for them, but why are we to be deprived of our property in that way? I am speaking now as representing every individual shareholder in the Kent Company; and the Kent Company is simply a number of people joined together, each of whom has his separate and individual right. I own, say, only 100*l.* in the Kent Company to-day, but I can go and sell that on the Stock Exchange and get at the next settling day 366*l.* 10*s.*; and why am I to sell that to anybody for less? It may be worth more; and that I venture to think in the case of the Kent Company is the fact, that it is worth more. I venture to think it is a fact, with regard to all the water companies; and I think there is a very cogent reason for believing it, and that is this: that for the last 20 years the companies have been harried in every direction by this attack upon them in every conceivable way. They have been told they were selling clarified sewage. That was one term; diluted sewage was another, I remember, applied by Mr. Bassett Hopkins, the Chairman of the Water Committee; and they have been told that they have been iniquitous persons who ought to be swept off the face of the earth; and everything has been done which could possibly frighten the ordinary investor, and the ordinary investor has been so little frightened that absolutely our Kent stock, as your Lordship has heard in regard to the 7 per cent. stock, can only be bought to pay 3*2*/₄, and the other stock, which, of course, has the consideration attached to it, of being part only of back dividends which must cease after a certain number of years—even that they have not been able to force down on the market under 3*7*/₅ or 3*8*/₅, and the debenture stock is, as you know, something like 2*l.* 14*s.*, and that is in face of everything that has been done to destroy the property.

If that is so, would not it be a fair and right thing to say to the arbitrator, "No, the market value is not that which is the value to me, the purchase money which I am to receive is not that which I can get on the market to-morrow, but I am entitled to say that the market has been injured and destroyed by the action of you who are proposing to be the purchasers, and I say that it is worth a very great deal more." I am entitled to say that. I should be entitled under the Lands Clauses Act and under any ordinary arbitration to say it, and I should be able to say it, I venture to think, with very considerable effect, and if I did say it, and was believed by the arbitrator, what is the financial result? I will call attention to one or two of Mr. Dickinson's answers shortly. Mr. Dickinson was very anxious to disown his own calculations of four or five years ago, when he said that a purchase at 30 millions would have the result of increasing the water rate 30 per cent. I know he has said, "I do not desire to be bound by that now."

(*Chairman.*) He said more than that. He said, "It is a mistake, I am wrong—I have satisfied myself that I am wrong."

(*Mr. Littler.*) Yes, he did, my Lord, but was he wrong? I venture to say he was not. He certainly was not wrong, but, however, I will put one test.

(*Chairman.*) I am asked to remind you, Mr. Littler, that you are addressing yourself to the case of the Kent Company—that you are speaking for the Kent Company specially.

(*Mr. Littler.*) I am speaking for Kent, and in speaking for Kent, I am speaking to the value of the Kent stock which I have just been discussing in regard to the 366*l.* 10*s.*

(*Mr. H. W. Cripps.*) It has exactly the same to do with Kent as it has to do with every other company.

(*Mr. Littler.*) Every other person has been left to the ordinary consequences of that argument, and they have received sums in consequence. I know that very well, because I have had the honour, and not only the honour, but the great personal satisfaction, of appearing in a considerable number of these things. I know perfectly well these things are considered, and are not only considered, but that the arbitrator gives consideration to them, and gives full effect to them, and that is why I am so anxious that I should be left to the ordinary provision of the Act, and if I am left to the ordinary

provision, I am pointing out that the result must be that the London County Council will increase and enormously increase the burden on the ratepayer.

My Lord, one of the best tests of whether that would be so or not is their anxiety to get out of this provision. Remember, Mr. Dickinson has said over and over again: "I will not take the Lands Clauses Acts; I dare not take the Lands Clauses Acts." If they thought the Lands Clauses Acts, or even a calculation on the present market value would suit them, they would give, and Mr. Gomme would have given you, and Mr. Haward would have given you, elaborate figures showing that there would be a profit and an advantage. But they say, "Oh, no, we cannot deal with things as they are, and we will not tell you what we think would be the proper way of dealing on that basis, because we should be prejudicing ourselves when we come to the arbitrator." If they cannot do it, all I can say is, it is a very great misfortune for your Lordship and your brother Commissioners, because you cannot form an idea of what their view really is, and of what the advantage would be to the consumer. Now, my Lord, I say that, and I was just going to finish that by pointing out that, in the case of Kent at all events, it must be a very bad thing for the consumer and for the ratepayer, for this reason, that not only is there no allegation with regard to Kent that there has been any sort of misbehaviour in the past, but you will remember that the Rivers Pollution Commission said that the Kent water was a priceless boon to the water consumer. Therefore, my Lord, we are in the position of having a property of the highest possible value. We are entitled to the very largest number of years' purchase that ever was given for a going concern. We are managed most economically, we have given perfect satisfaction to everybody, and, what is more, we can go on supplying our district with water to the very end, not only in our own existing district, but over any district which we may be required by the consumers to extend our mains to. We can supply all the water we want at a cost of 35,000*l.* per million gallons; in our own district we can supply all that can by any possibility ever be wanted for that population, and more for 35,000*l.* per million gallons as against the 96,000*l.* of the Welsh scheme.

Now, my Lord, it has been suggested through the witnesses, and I have no doubt my friend, Mr. Balfour Browne, will say it when his turn comes—Oh, then, what can you have beyond your 10 per cent. and your 7 per cent., whatever your stock is standing at? The answer is, that you have an absolutely secured property when you have got to your 10 per cent. or your 7 per cent., and you have spread over a larger district, spending your money under the auction clauses, a thing which is as absolutely certain as even anything secured by the London rates, and it is a property which must go up in the market if we are left alone. Your Lordship asked Mr. Dickson, and he was a little confused at first, because I do not think he quite followed in all respects your Lordship's question until he came to think a little more of it—you asked Mr. Dickson, what other security is there you can name which is like it? Now, my Lord, I will venture to ask your Lordship to ask yourself and the other honourable Commissioners to ask themselves the question, what is there like it? There is nothing like it. As long as there are houses, and as long as those houses are occupied, they must take the Kent water, and they will take it because there is no other supply. I do not mean to say they are bound to take it if they get another supply of their own, but, inasmuch as the whole of the water there is well water, necessarily every person who comes into that district buys our water because it is best and cheapest. He buys it at a price which is secured to us by Parliament, and which, unless we misbehave ourselves, Parliament will not take away from us. He buys it, and buys it daily. Consols, if we were to go to war with France, would, doubtless, go down below par, or if we had a very serious European war; railway stocks depend on many strikes—they depend on strikes amongst their own men, and they depend on the traffic of the country; in fact, I have heard it stated by City men that you can have no better gauge of the condition of the country as to its prosperity, or the reverse, than seeing what are the traffic returns of the London and North-Western Railway, spreading as it does over nearly the whole of the country. But those stocks go up and down according to the prosperity of the country, and they go up and down according to the receipts every week. Now, we know, given the number of houses that are occupied,

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what our receipts a week are to an absolute certainty, and we know that whatever else may come in we cannot be competed with. A gas company is superseded by electric light, a railway company is competed with by tramways, and is now going to be competed with by the light electric railways; they are competed with in every direction, they are liable to the competition even of the new traction engine, which, I see, is attracting some attention in Lancashire, where they are alleging they can carry, in competition with the North-Western, between Liverpool and Manchester, and so reduce the cotton rates. You have every sort of competition that can be thought of. A railway company can be competed with by another railway company. A water company cannot. A water company absolutely cannot. And I really must say, my Lord, that I can scarcely conceal my contempt for the time that has been wasted over trying to persuade your Lordship that there is any competition in this case, as a ground for knocking down the value of the property. My Lord, there has been no competition since 1821, and there can be no competition now, because, of course, no authority would for one moment tolerate two sets of people tearing up the street.

Your Lordship remembers I am sure perfectly well that is what led to the districting of the gas companies. For example, there was the Imperial Company and the Gas Light and Coke Company, and I think another company, I forget what it was called, which absolutely all round the neighbourhood of Regent's Park were tearing up the streets for three sets of pipes. If a consumer did not like one company's gas, he said: "Oh, very well, you have not treated me very well and I can go to another." The consequence was, no sooner was a street in good order, than, for the mere purpose of supplying one single consumer, the street was all torn up again to put in the service pipe and to take it off one company's main on to the other—extravagance to a degree intolerable in the nuisance which it was to the people who lived in the streets.

But, my Lord, there is something more than that. Your Lordship will remember that just as the Lands Clauses Act is as it were the charter of the owner of property when property comes to be taken from him, in 1847, two years afterwards came the charter of the water companies, namely, the Waterworks Clauses Act. Now, my Lord, from the date of the Waterworks Clauses Act onwards there has been no instance in which Parliament has sanctioned competition. I do not believe that there was for a very long time before, but from 1847 onwards, when the companies were placed under the provisions of the Waterworks Clauses Act, there never has been an instance in which Parliament has sanctioned the competition.

But, my Lord, I go a step farther. In 1848, which is the next step in the history, the Public Health Act of that year was passed. Just as these other Acts had provided codes for public undertakings, the Public Health Act provided a code for the administration of the sanitary affairs in every district, and the 76th section of the Public Health Act provides that public authorities may provide water except in the case where there is a parliamentary statutory company which is able and willing to apply—

(Mr. Balfour Browne.) That is the 52nd section, you said the 76th.

(Mr. Littler.) I said in 1848. It was again in 1858, and again in 1875.

(Chairman.) It is the section Mr. Balfour Browne is referring to.

(Mr. Balfour Browne.) It is the 52nd section, not the 76th.

(Mr. Littler.) In the 1848 Act it is the 76th section.

(Mr. Balfour Browne.) You said 1875.

(Mr. Littler.) I said 1848, and that it has been repeated, my Lord, in every Public Health Act that has been passed since; and it is not only—I was just going to add that, but Mr. Hollams has just said, to take care that I did not forget it, it is in the Metropolis Act of 1855 itself. Therefore, either in or out of London, Parliament is committed by the legislation of half a century to the prohibition of competition even in the hands of a public authority.

Then what is the use of talking about there being any risk attached to our position? My Lord, there is absolutely no risk. We have that which must be bought, and which must be bought on our terms, and must be bought from us, and nobody else. Therefore,

my Lord, to tell me that I ought to have my property, treated as an individual—and I am speaking as an individual shareholder—that I ought to have my property treated as though it was subject to being discounted and knocked down, and knocked about by certain special provisions of a special Act is an absurdity.

But I will show your Lordship that, as far as the Kent Company is concerned, we are, according to themselves, in a position in which we have no competition, because, in their Bill of this year, they set out in a schedule the competing powers, which I will deal with. Of course, the object of this is to try to knock down the price of the water companies by reciting it all in a Bill for an Act. This is their Purchase Bill of this year; and they have a schedule there, my Lord, in which they schedule every one of our districts within the Metropolis. (*The learned Counsel handed in prints of the London Water (Purchase) Bill.*) The schedule has different columns. You will find it on page 28 of the London County Council's Bill, which is before the House this year. The first column gives the name of the parish or place in London; the second column the company having powers to supply in 1800, so far as can be ascertained, or first authorised to supply since 1800; the next gives the companies subsequently authorised to supply in competition, and the last the competitive powers confirmed. Now, my Lord, the first one where our name appears is the fourth from the bottom of that page—"Greenwich (District), St. Nicholas, Deptford, St. Paul's, Deptford (including Hatcham)." Now, the company having powers in 1800 was the South London; we subsequently, they say, got powers to compete in our Act of 1809. They are utterly wrong.

(Mr. Balfour Browne.) I may say that this, my Lord, is no new discovery; you will find it in your own Proceedings; it was put in by Mr. H. L. Cripps at question 252.

(Chairman.) Yes.

(Mr. Littler.) I overlooked it there; but it is here, on page 28 of this year's Bill. I confess I overlooked it in the multitude of these tables.

(Mr. Pope.) I did not know that Mr. H. L. Cripps gave it as being part of the County Council's Bill; did he?

(Chairman.) No.

(Mr. Balfour Browne.) Of course not; the Bill was not in existence at the time.

(Mr. Littler.) I am going to deal with it as part of the Bill, because it is rather important in my case that it is part of the Bill. They say we were in competition with the South London in 1809. But you heard from Mr. Dickson what we were compelled to do there; we were compelled to buy up the old people. Therefore, that is an error. We had to buy up the old people when we came, you see; and Parliament, in those days, said: No, we are not going to have competition; when you come, you must buy the existing people.

Then, my Lord, if you look through the rest of the cases on the next page about the middle, you will find that there is a blank as to our having any powers of competition. We got our powers in 1811, in 1864, and in 1809, and there is no competition. Then in 1809 we are said to have got powers competing with Lambeth; but then there is this note at the end of the table, page 32: "The Lambeth Company either took a very wide view of their powers, or obtained an extension of their area in 1848. But their Act of 1848 does not refer to any intention of extending their area of supply." Now, my Lord, meagre as that is, that only applies to a portion of Lewisham where it is not exercised. Then we go on. In regard to the whole of the rest of the Kent district, my Lord, Plumstead, and every other place which is in the Kent district, the second column is in blank, therefore, there is absolutely no competition with us.

(Chairman.) Is there any section or any enactment referring to this schedule in the Bill? How is it proposed to be used?

(Mr. Littler.) It is referred to in the preamble.

(Chairman.) Only in the preamble?

(Mr. Littler.) Only in the preamble—that refers to it. I can give you the reference in one moment.

(Chairman.) I have seen it, and I will not trouble you—it is on page 3.

(*Mr. Littler.*) My friend, Mr. Pope, says: What is the schedule there for? The schedule is there to prejudice the arbitrator, that is all. That is the whole of it.

(*Chairman.*) Do not say prejudice.

(*Mr. Balfour Browne.*) It is part of our preamble, my Lord, and if it is not proved it will be struck out.

(*Mr. Littler.*) The preamble of the County Council is: "Whereas we hate the water companies and they ought to be extinguished."

(*Chairman.*) Well, well, that is your way of putting it. They would say, the meaning of the preamble is, whereas the companies are competitive institutions, do not give them a monopoly price.

(*Mr. Littler.*) Yes, my Lord, that is the object of it, and it was entirely for that purpose and for no other. Then they would say when they came before the arbitrator, Oh, but we told all that to Parliament; look at it, it is in the preamble; that is the whole object of it—and a very interesting object it is, only we found it out.

Now, my Lord, I have dealt with the question of the Lands Clauses Act, and whilst I am on this Lands Clauses Act, I will draw attention to the fact, and it is simply a fact, that there is not one word in the Lands Clauses Act, as the honourable member of the Commission, the learned member on your right said, about compulsory sale.

(*Chairman.*) That we are aware of.

(*Mr. Littler.*) Absolutely not a syllable. The reason for compulsory sale is very comprehensible, I venture to think. My Lord, it is not always given, but I know of one instance of a water company where, judging from the figures—of course, the arbitrator did not tell us—we were confident that compulsory sale had not been given. But that was a case where the water company had been absolutely misbehaving itself in a way which was, I venture to think, without precedent in the annals of a parliamentary company. But I do know of another instance, not a water company, because there the gentleman who gave the award avowed what he had done, where people were selling building land, and under the schedule a railway company took some of that building land, and I had the honour of arguing it myself. I said, as the land is in the market for sale, what can the man want more than a big wholesale purchaser; you have no business, where he is offering the commodity for sale, to give him the 10 per cent.; and the arbitrator did not. It does not follow that the arbitrator will give it at all. I daresay your Lordship may remember in the old days the happy days when agricultural land was worth something—that sometimes in consequence of the prospective value as much as 40 or 50 per cent. was asked for, and in some instances in the northern counties was even got, and it was common enough even in the southern counties to give 25 per cent., because of the prospective value of the property which might hereafter be worth a very great deal more. The 10 per cent. is not a stereotyped thing. There is nothing to prevent the arbitrator giving 20 per cent., 10 per cent., or 5 per cent.; or as I pointed out just now, he can, and he does, if circumstances justify it, give nothing.

Now, my Lord, what is compulsory sale for? There are a great many things that it is for. There is one thing, and even in their clause the London County Council recognise it as being the proper thing, and that is the cost incurred in re-investment, because they say that the arbitrator may consider that. That is in this disputed clause of theirs. But there are a great many other things, my Lord, in the 10 per cent. First of all, unascertained prospective value. Now, I cannot illustrate that better than by pointing out what took place in the Stockton and Middlesbrough case. In the Stockton and Middlesbrough case Parliament went out of its way, and prescribed 25 years' purchase of the dividend as the price which was to be paid; but the arbitrator was to find the prospective value. Then 25 years' purchase was thought to be a very handsome thing, because those were the days of 5 per cent., or 20 years' purchase, when that was a common enough thing for ordinary property or ordinary shares. Railway shares, and so on, in the year 1874 could be bought to pay you 5 per cent. Parliament said, "You shall have better than that—we will give you the 4 per cent. table, although 5 per cent. is the average; and on the top of that, if the arbitrator thinks that there is any prospective value, he will give it you." In those days it was thought that the arbitrators had given a

considerable percentage for prospective value; but, my Lord, within 25 years money has so fallen in value that, instead of 4 per cent. being the proper table, something like, in such a case as ours, 2½, 12s., or 2½, would be about the proper multiplier, which would make about 38½ years' purchase. Therefore, your Lordship sees that the arbitrator ought to have the means, if he thinks that the property is of such a nature that the demand for it will increase, and that therefore it would be worth more years' purchase a dozen years hence than it is now, to provide for that in some way. But instead of providing by a number of years' purchase, as to which he ought to have some arithmetical information, he says, "I cannot say or tell you exactly how much this will increase, but it certainly will increase to a certain extent, and I give you a percentage."

That is one item. I do not say it is the 10 per cent., of itself, but that is one item which he is entitled to take into consideration. But he is also entitled to say this: "You are having a very large amount of expense put upon you; you can only get your taxed costs; I consider that in your case you ought to stand exactly where you are;" and the London County Council ought also, we say, to provide for the cost of re-investment. But you will have in an arbitration of this kind to employ a host of professional gentlemen, who, I assume, are of the highest standing, and who necessarily, being of the highest standing in their profession, expect fees beyond those which would be allowed between the parties. That, again, is another matter which is included in the 10 per cent. There is another and most important thing which is included in the 10 per cent., my Lord, and that is this: Your Lordship will remember that ever since the case of Croft and the London and North-Western, it is distinctly clear that you can have no second arbitration whatever turns out, and, therefore, the arbitrator, if he is a fair man, is usually in the habit of saying, "Well, I am to give,"—not the skimpy amount which you will find, when I come to deal with the County Council, they propose to give—"I am to give, according to the Act of Parliament, the full value," as it is given in one case, the "full compensation" in another, and "purchase money or compensation" is used in a third—"I am bound to give this man as much as will put him in the same position; but I am like everybody else, I am fallible, and inasmuch as this is being taken from him against his will, is not a mere voluntary purchase and sale between willing seller and willing purchaser, but is being taken from him against his will, I will provide for the fallibility of my judgment by adding something on to it." That is why the 10 per cent. is so frequently added. It is just like the thing which is common parliamentary form every day of one's life. In estimates, an engineer, after putting his million or million and a half, or whatever it is, adds on to the end "contingencies 10 per cent.," or, if it is a risky work, "Contingencies 15 per cent." It is in order to make sure that the man who does not want to part with his property, but is compelled to part with it for the public benefit, shall not, under any circumstances, be the loser.

Now, my Lord, is that unjust? Surely not. Surely it is a rational thing to be done. And when you talk loudly about depriving us of anything beyond the mere cost of investment, you are doing that which I am sure no member of this Commission would be willing to do—you are depriving us of that which is an extremely valuable asset in our hands. So much for that.

Now I should just like, if your Lordship will kindly look a little at one or two of the passages in the preamble, and then look at clause 7 of the County Council Bill, because it discloses their intentions far more than anything. First of all, on page 2, your Lordship sees the beginning of all this story about competition. It begins on line 7 at page 2, and goes onward to line 24 on page 3. That is all deliberately with the intention of prejudicing us with regard to competition—the whole recited story throughout about competition.

Now, my Lord, you will remember what Mr. Dickinson said on that. Perhaps I had better give your Lordship the reference to what Mr. Dickinson said. He told us that the question of competition was one which was of only practical importance with regard to the matter of the years' purchase. I will give your Lordship the reference to it in a moment.

(*Chairman.*) I have the passage in my mind.

(*Mr. Littler.*) It is Question 5322. "The practical difficulties of having operative competition are very

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"great indeed. What competition is worth is upon the question of the number of years' purchase." Now, my Lord, why is a thing which is of no practical value to justly and fairly have any effect on the number of years' purchase? It passes my comprehension. I cannot see the justice or the fairness of that. Although everybody knows that, practically, there can be no competition, as Mr. Dickinson says, "The practical difficulties are very great indeed. What competition is worth is upon the question of the number of years' purchase."

Now, my Lord, what is the next thing that they say in their preamble to our prejudice? "Whereas under their existing statutes the charges of the companies are based on the rateable value of the premises supplied, and the charge leviable on the consumer becomes periodically increased owing to the general augmentation of rateable value, and frequently without any increase in the requirements of the premises for water, or of the amount of water supplied." Now, my Lord, there is no difference in that between London and any other place. It is inherent in the method which has been adopted for the benefit of the poorer consumer of charging according to rateable value. The moment you have that, it is necessary that if the rateable value goes up the man who has the house must pay more; it is *per contra* with the man whose house has gone down, although he consumes exactly the same. Take the illustration of those big houses in South Kensington, where they went down, some of them, as much as from 500*l.* to 200*l.*, in rateable value; the owner still living in them paid on 200*l.* a year, whereas he had been paying on 500*l.* If, on the other hand, he was in a quarter where property had gone up in value, he would have paid on 500*l.*, perhaps, instead of on 200*l.* The whole thing is an anomaly, but it is an anomaly which cannot be got rid of, except by charging, by meter against which, as your Lordship knows, there are so many grave objections, because you do not want to discourage the poorer people from the plentiful use of water, and numerous other reasons are given, but at all events it is recognised throughout the whole of the towns.

If you will take any table which you like, giving the increase of rateable value in large towns, you will find Manchester, Liverpool, Birmingham, Leeds, and, I think, some others, every one of which has increased its percentage just as much as London has. It is not peculiar to London. I was going to say, putting it in another way, as Mr. Hollams puts it, better and more shortly, exactly the same thing applies to police and to paving, and to lighting. Because your house has been raised from 200*l.* to 500*l.* you do not consume any more of the public gas, you do not use any more of the public footpath for your carriage, or your walking, and you do not do anything more making it justifiable that you should support more poor people, but you have to do so. It applies to everything where the test is rateable value. If they could start some other method, by meter, or anything else, then the whole thing would be solved, but that is an impossibility apparently. Your Lordship remembers the City tried to bring a Bill in, and they were obliged to drop it, there was such a strong feeling against the rich having to pay for the poor people's water that it was flung out on the Second Reading by a very large majority indeed. Therefore there is no option but to charge, and then when they tell you that it is periodically increased, the answer is that it is periodically increased everywhere, except that in London, on account of the very large number of changes that take place, it was provided that the change should only take place once in five years, and everywhere else they can change whenever they like. I know, as a matter of fact, they very often do not, but in other places in the country, except in London, you are liable to this fluctuation every year instead of every five years. That is the only difference between London and the country, and wherever a place, as I say, is increasing in rateable value, any other place where it is increasing in rateable value, the income of the water companies goes up, and wherever it decreases it goes down.

Now, my Lord, that especially applies to me, because, as your Lordship knows, those tables that were put in by Mr. Dickson showed what the effect of the increase and decrease of rateable value had been in the case of the Kent. Now, Kent is not alone. Apart from some favoured portions of the Metropolis where large new houses have sprung up, and where People of wealth have been induced to congregate, the great increase is in the rateable value. Take such

places as Shoreditch or Bethnal Green, or any of those places in the East of London, the great increase there in the rateable value is not of the houses, but of the railway companies, of the gas and water companies themselves, of the great public concerns, and of the big warehouses which do not consume water. It has not been an increase imposed on the water consumer, it has been an increase imposed on the water company, and actually they have in paying their public rates themselves had to contribute much more largely to the public rates than anything they get out of the increase of their water rates. Your Lordship knows that in one of the companies—I think it was my own; if it was not my own, it was one of the larger companies—it was shown that the increase had been something frightful. In the case of the Gas Light and Coke Company I know that their rating is something like five times what it was not very long ago. All those things are incidents of rating, and have nothing to do with water at all, and, therefore, this paragraph in the preamble is put in for the purpose of unduly and unfairly knocking down my value.

Then they recite the decision of Sir Matthew White Ridley's Committee recommending that powers should be granted to the County Council. I am perfectly aware that that was so, but that was in 1891—that was eight years ago. Now, my Lord, I pause on that to remind your Lordship that Sir Matthew White Ridley advisedly, in the very beginning, declined to go into the question of purchase at all. He assumed purchase as being a foregone conclusion, and on the assumption that purchase was to take place, certain recommendations were granted as to the County Council. You will find that most distinctly in the evidence, because I have carefully verified my own recollection. I promoted one of those Bills, and you will find that the question was not purchase or no purchase, but purchase by whom, and so strong was the antipathy against the water companies in those days, that the water companies did not dare to come forward and say, No, there ought to be no purchase. They only went there to see what they could do to temper the wind, and they tempered the wind to such an extent that both the Bills were thrown out.

Then, my Lord, they next recite the Water Commission of 1892—Lord Balfour's Commission. There, again, they talk about the future yield of the Thames and the Lea, which "cannot be relied upon to the extent then estimated by the companies or the said Royal Commission, and that the amount of water required per head of the population is increasing and likely to increase above the amount then forming the basis of their calculations." I pause there again, my Lord, to point out that that is in order to throw off from our value by saying we are incapable without an enormous increase of expenditure of continuing the supply. Well, my Lord, I should have thought just in passing, if that is so—if there is an enormous expenditure which has to take place—it is just the very worst time for the public to purchase. At the present moment, whatever may be the cost to the companies, the companies, in order to protect their own property, must incur it, and if there is this enormous expenditure required, so far from that being a reason in favour of purchase, it is directly a reason against it, because the water consumers will then have to provide it, whereas at present the water company must provide it, and the water company cannot increase their charges, except in the case of the West Middlesex, where they have paid off their back dividend.

(Mr. De Bock Porter.) The fact that the provision has to be made will surely affect the price.

(Mr. Littler.) But if there is to be a large expenditure, that expenditure would surely be very much better left to the water company who cannot get beyond a certain amount, than in the hands of a public authority, who may not only levy the full water rate, but may levy, in addition, a rate in aid.

(Mr. De Bock Porter.) The fact of that expenditure having to be made will operate, of course, with any arbitrator. It will have its effect there.

(Mr. Littler.) But the security of the revenue would operate with any arbitrator. He would consider what was the security of the revenue—I admit that. Every arbitrator under the Lands Clauses Act will, and does, that is why he gives a statutory company a larger number of years' purchase than a non-statutory company which is exposed to being competed with by the local authority. I agree; but what I do say is this,

that to put in this recital is an objectionable instruction to the arbitrator; it is a finding that that is true. Now, we deny, and we say you have evidence of the strongest possible character upon the point—the probability of the 35 gallons that has been taken, because Lord Balfour's Commission took it. We deny that that is the probable result of the future with the waste preventers. What was all this evidence about waste preventers for; except to show that the probability was that there would not be anything like that demand for water that it is said there would be? Therefore, this is put in as for the very purpose of prejudicing that very question.

(*Chairman.*) Mr. Littler, I am very reluctant to stop you, but we have not got to consider this Bill.

(*Mr. Littler.*) No, my Lord, that is true. But now I have got as far as I need go.

(*Chairman.*) I hope you will leave it then.

(*Mr. Littler.*) Except that there is one thing which is recorded here, and that is the record of what Sir Joseph Pease's Committee said. It simply happens to be recorded here, and therefore, as I have got it in my hand, I refer to it. It is the last paragraph in the quotation. Of course, your Lordship has had it, *ad nauseam* I am afraid. "From this acknowledged anomalous position it would be greatly to the public interest that both the water companies and the inhabitants of London should be speedily freed." My Lord, we are perfectly agreed about that. It is most desirable that the question should be settled, and that is what I hope this Commission will do; but it does not follow that Sir Joseph Pease meant that it was only to be settled by the companies being bought. If it were decided that the companies were not to be bought—notwithstanding what Mr. Dickinson says, that he will go on agitating, I think he might agitate till he was black in the face, it would not have very much effect if once this question is reported against by such a Commission as I have the honour to address.

Now, I will just draw your Lordship's attention, so as to finish up to what I have got to say, to the question of compensation, to the compensation clause which they have got here, clause 7, which is the same clause, and therefore, I may—only because it is a convenient method—refer to it. It is the same clause, I think, almost word for word, but certainly in effect, as that which was before Mr. Plunket's Committee.

(*Chairman.*) I think not.

(*Mr. Littler.*) Now, my Lord, the arbitrators are to determine the fair and reasonable value of the undertaking with such further sums as the arbitrators may award to meet the cost of re-investment, and the arbitrators in order to ascertain such sum shall inquire into and consider all the circumstances of the case. Now, within the dimensions which are accepted and known by usual practice, every arbitrator does that. What is the reference in the Commission's own paper? I forget at the moment.

(*Chairman.*) At question 209 we have got the Plunket clause printed.

(*Mr. Littler.*) Now, my Lord, I say that every fair arbitrator, in fact every arbitrator, does consider every circumstance of the case which he lawfully may, and why is he to go out in this particular instance, when I have shown that for the last 50 years there has been no such thing as going out of it. "The contentions of the Council and the company." Now, my Lord, what has he to do with that? He shall consider all the contentions, that is of the Council and the company, however absurd; it is not that he may consider them, but he shall consider them, that is to say, whatever is presented to him, whether it is competition or anything else, he is bound to consider it, and, of course, if he considers it he may give weight to it.

(*Chairman.*) I should be very glad, Mr. Littler, if you could assist me as to the meaning of the words that the arbitrators are not to be "precluded by any legal objection from entertaining" the matters laid before them by either party.

(*Mr. Littler.*) Do you mean the words "and may deal with the same in their absolute and unfettered discretion"?

(*Chairman.*) No, I am referring to words in the preamble of the clause: "It is intended to provide that the arbitrators should in determining such value have regard to all the circumstances of the case, and to hear and consider all matters, whether past,

present, or future, laid before them by either party relating to any such circumstances, and should not be precluded by any legal objection from entertaining the same."

(*Mr. Pope.*) My recollection of that is that my friend Mr. Moulton gave some evidence before the Committee, and said Parliament might intervene to reduce the rates of a company or to interfere in some way with their means of earning income; and the chance of Parliament intervening should be taken into consideration by the arbitrators.

(*Chairman.*) Is it not much wider than that?

(*Mr. Littler.*) I am glad your Lordship has asked that question because I was, perhaps, taken off to something else, and I have not made my meaning clear on that. Under the Lands Clauses Act you have to take the value as at the date of the Notice to Treat, and you have no business to calculate on some entire change of circumstances such as Parliament abolishing a water company's charges for example, or an earthquake taking place. You are bound to take into consideration reasonable prospective things which would present themselves to the mind of an arbitrator; and Mr. Moulton, as my friend Mr. Pope said—very frankly said—what I want to do is, I want to say to the arbitrator, Parliament might step in and reduce your charges to one-half. Parliament might abolish our charges altogether, and the arbitrator would absolutely under this clause be bound to consider such a suggestion as that, although Parliament never has in any case interfered to reduce the charges of a water company. They will come and say, Oh, but under these circumstances Parliament could, might, or should have interfered; and he has to form an opinion as to what the wisdom of Parliament is likely to do in unknown circumstances.

(*Chairman.*) Does it do more than that? Would it let in an argument of this sort—you are entitled by law to charge your maximum rate. I say it is unfair that you should charge your maximum rate in every case. You gave a sort of hope, perhaps, not exactly directed to this scale of rates, but you gave hopes that you were not going to charge your maximum rate in every case; estimate, therefore, the income of the company at the amount which it would reach if they equitably, and not legally, exercise their powers.

(*Mr. Littler.*) He would be entitled to do that, my Lord.

(*Chairman.*) Is that so? I pressed one or two witnesses of the London County Council in vain to know whether that was meant.

(*Mr. Littler.*) Whether that was intended or not, they certainly would, my Lord. Let me give you an instance. Take the case of the Lambeth. I take that intentionally, and not my own case. Take the case of the Lambeth, which has larger charges; they might say it is not equitable if you should charge more than the West Middlesex, although the West Middlesex has paid off its back dividends, and has reduced its rates. I am glad my learned friend, Mr. Pope, referred to it. What Mr. Moulton said is to be found on page 206 of the proceedings in 1895, before Mr. Plunket's Committee. The Chairman asked him, "I am not talking now of the absence of instructions; it would be because they held that that was not a proper ingredient to be taken into account in the absence of instruction for the purpose of fixing a price? (A.) You put it exactly as I wish to put it, but may I add one word, because they would say this: Although those pledges may be things which Parliament would enforce legally, they have no effect, and the consequence is, if you are going to take into consideration that which Parliament might enforce, but which at present is not embodied in the law, you must have a specific direction for that purpose." The next question is: "That is to say, that this Committee, or Parliament under the instruction of this Committee, is to put into the mind of the arbitrator the entertaining of this ingredient in the price to be paid, which, in the absence of such an instruction, the arbitrator, the umpire, or the court consider an improper thing to be taken into account. (A.) Exactly so; that is exactly what the clause asks with regard to this point." Then Mr. Balfour Browne emphasises it in his next question, 2886: "I agree with this qualification—not improper to be taken into account—but which the court could not take into account. (A.) In the absence of

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"express instructions." And then the Chairman puts it very emphatically, my Lord, if I may just read one more paragraph before I close this point. "(Chairman.) "Now are you getting away from the point? That is not what the witness has said. I put the question fairly to him. Here there are apparently unlimited words. The arbitrators are to take into consideration all the circumstances of the case. A circumstance is suggested to them; they refuse to take it into consideration. The court supports them in refusing to take it into consideration, knowing that the arbitrators have the power to take into consideration all the circumstances of the case. Then I put it to the witness that if it is rejected by the arbitrators and the court, it must be because they consider the ingredient an improper one to be taken into account in fixing the price. Then I ask him, 'Is not the effect of his evidence that, by adopting these conditions, and putting them into the Bill, or keeping them in the Bill, the Committee would be doing for the County Council, for the purchasers, a thing which they could not get the arbitrators otherwise to do for them?'"

(Mr. Balfour Browne.) Those words, my Lord, were Lord Rathmore's own words—Mr. Plunket's own words.

(Mr. Pope.) No.

(Mr. Balfour Browne.) I will show you that.

(Mr. Littler.) They are certainly not Lord Rathmore's own words.

(Mr. Balfour Browne.) I have got them here.

(Mr. Littler.) In addition to that I only wish that Lord Rathmore were a member of this Commission so that he might, without breach of judicial considerations, give you what he thought of the matter.

(Mr. Balfour Browne.) I will read the decision.

(Mr. Littler.) I feel pretty confident on that from the way in which the questions were put, and I was there pretty constantly.

Now, my Lord, to refer you to line 24 of the copy of the Bill I am reading from, they shall consider "and may deal with the same, or any of them, in such manner as they, in their absolute and unfettered discretion, think fit, on such terms, and in such manner, in all respects as they think fair, reasonable, and expedient, and as fully and effectually as could be done by Act of Parliament." Therefore, my Lord, if, on hearing what the County Council have got to say, the arbitrators were to think that our rates were to be cut down, and that they themselves would pass an Act of Parliament to cut them down from 30s. a house to 3s., they are entitled to do that, and to value our property on the basis that we can only earn 3s., which would be a loss of 27s. a house, which, of course, would bring down the property to nothing. My Lord, there never was such a thing done. Two of the witnesses—I think Sir Arthur Arnold was one; certainly Mr. Dickinson was the other—said that it has been done by Parliament, and he said that it had been done in the case of the Chatham and Dover, in the case of the Albert, and in the case of the European. Now, my Lord, it is a little unfortunate for those gentlemen, that there are some here who had something to do with those cases, because, although it is a long time ago I am sorry to say, I had to do with the Chatham and Dover case, I had to do with the European, and I had to do with the Albert.

The Chatham and Dover was the case of an absolutely insolvent company, which had at least 28 separate sets of debenture and preference stocks, all of them having different degrees of priority, all of them having different questions arising between themselves; there was not money enough to pay any one of them in full, and in addition to that there was an allegation that some of them had been fraudulently issued. It was a bankrupt estate in the course of which there were no fewer than 32 actions going on in the Court of Chancery. All those actions were going on at the same time, and the costs of course had to be incurred by the company. It was not a question of what was the value of the company, it was not a question which might have been considered under the Lands Clauses Act, or under any other Act of Parliament, so that but for special provision all those different debenture holders actions would have been going on at the same time. And worse than that, my Lord, they were not all before the same judge, and the consequence would have been that the actions I suppose would have been

decided somewhere about in 10 years' time, because every one of them were questions of such importance that they might have gone to the House of Lords. The consequence of that was that the company and the debenture holders came and asked Parliament to put an end to that state of things, to put a stop to all the actions, and to refer to Lord Cairns and Lord Salisbury the question of what each set of persons ought to have. The consequence was that Lord Cairns, who afterwards acted alone, issued an order in which he settled the priority of every particular stock, and how much they should have, and I think, with regard to some classes of stock, he consolidated them, and gave, say, A. 20 per cent. of the nominal value of the holding, B. 57 per cent., and so on, doing the best he could, carving out the carcass which he had so as to give at all events a little food to all of these people who were entitled to it. And, my Lord, in addition to that he issued an arbitration stock for the purpose of meeting all the deficiency.

It has no more analogy to this question than what any county court judge in the Kingdom may be doing at this moment, my Lord, while you are listening to me.

And again with regard to the Albert. The Albert was an insolvent insurance company, which had a large number of different classes of policy holders, and the question arose out of the amount of money which they had which was not sufficient to meet the whole of the claims, how it could be disposed of, and how the money, instead of being wasted in law suits, could be spent in giving the unfortunate policy holders who had been spending their hard earnings on policies something for their money, instead of the whole being wasted in law.

Exactly the same with the European; in the case of the European, if I remember rightly, there were 10 or 11 different sets of solicitors engaged in as many different law suits; all of which were being conducted at the expense of the company, because there was no defence; it was not that they were legally not bound to pay, but that they had not the money to pay everybody with. The consequence was that each of these actions would have gone on to ascertain what were the priorities between themselves and the different sets of policy holders, and to the creditors of the company, because they had also creditors; and, therefore again, my Lord, that was disposed of by the summary process of staying all the proceedings, and referring the whole of the proceedings to one and the same lawyer of high standing to decide them.

Then there was one case which was mentioned by another gentleman, and that is the fourth, and that I happen also to know all about because I was in it. That was the Portsea Island Benefit Building Society. There again the Company were absolutely insolvent. There were actions going on in all directions, and all the actions were stayed, and it was referred to Lord Macnaughten, to do what he thought was just with regard to the money which was in court. In point of fact, in each of these cases, if I may say it without disrespect, which I am sure I think no one would think I would be guilty of to those noble Lords, they were in point of fact appointed liquidators to wind up the affairs of the company, and for that purpose all the actions were stayed, and all the powers of the courts were transferred to them. That is all.

(Chairman.) Had they given to them the powers of an Act of Parliament?

(Mr. Balfour Browne.) Always in these four cases.

(Mr. Hollams.) Not in terms, I think.

(Mr. Littler.) In the case of the Chatham and Dover that was so. I am not so sure about the others.

(Mr. Balfour Browne.) Yes it was.

(Mr. Littler.) I will tell you why it was necessary in the case of the Chatham and Dover, because it was necessary to issue arbitration stock, and therefore they had to empower the company to raise funds. I think that probably would be the case as to the others, but I have not looked at that particular point. In the case of the Chatham I do know, and that arbitration stock which is now selling every day in the market is so called because it was issued under the authority of Lord Cairns by the power entrusted to him for that purpose by the Act of Parliament in question.

But, my Lord, that is a very different thing from deciding the value of a man's property according to a lot of ideas not contained in the ordinary laws, as though the gentleman to whom it is entrusted was absolutely

above and beyond all law. And, my Lord, why? I am an innocent holder, I am a holder in a company which, as I pointed out, is doing the best that could possibly be done, and I am to be told that in order to suit the convenience of the London County Council and in order that they can accomplish that which they admit they could not otherwise do, I am to be put into the position of letting any man in this Kingdom confiscate my property. In the other case there was not the possibility of confiscation, because it was simply settling priorities by a lawyer for the purpose of seeing that everybody got what was justly due to him, and in each case it was a bankrupt concern which could not pay everybody, and whose effects were being frittered away by a number of law suits which could benefit nobody except the lawyers who were concerned. As my friend Mr. Pope reminds me, in that Act Lord Cairns was named in the Act as Arbitrator—he was absolutely named. I may tell your Lordship that in every one of those cases there was a very serious discussion before a Committee of both Houses of Parliament as to whether those were powers that ought to be granted. A great many people came and said that even in that case they were not powers that ought to be entrusted to anybody, and I remember, in the case of the Onatham, we had, I think, two or three different Bills for accomplishing the same purpose, and the question was heard with very great care in Committee, and the end of it was, I remember, the Chairman saying, "Well, but what can we do? We are not going to let this waste go on." It was a case of necessity; it was absolutely necessary that Parliament should come in with a strong hand and do that which never had been done before, and which never has been done since, and which ought not to be done except under exactly parallel circumstances.

Now, my Lord, I have just one more criticism on this clause, and then I have done, and that is on the last six lines. "The arbitrators may at any stage of the proceedings under the reference to them, and shall if so directed by the Court or a judge, state, in the form of a special case, any question of law arising in the course of the reference"; how can any question of law arise in the course of the reference when a man has got all the powers of an Act of Parliament? It is absolutely impossible. I have asked every one of my legal friends who were likely to be able to help me in this matter, and I cannot, for the life of me, understand what it means, except that it is to cloak over an arbitrary and despotic power which they are seeking to put into one man's hands. Then, "any question of law so stated shall be for the determination of the Court, subject to all rights of appeal as from a judgment or order of the Court." Fancy an arbitrator saying, "I have got the power of an Act of Parliament to say these rates ought to be cut down one-half. I have got that power because it has been entrusted to me in my absolute discretion." The Court would say, "What in the world is the use of asking us any question? You have got an absolute discretion over law and over fact. How can we deal with anything you have done, may do, or may not do?"

(Mr. Pope.) He is not to give effect to any legal objection, but if any legal objection is stated the Court shall have the power of deciding it.

(Mr. Littler.) As my friend Mr. Pope puts it, he is not to give effect to any legal objection that he is not entitled to go into any particular question, but then having done that, and he reports to this Court that he has not given effect to it, the Court is to decide whether he has given effect to it or not. It really is an incomprehensible provision, my Lord, unless it is with a view, as I say, of glossing over this marvellous power.

(Chairman.) Will you remind me—I forget for the moment—whether, under the Lands Clauses Act, the arbitrator is to state a special case?

(Mr. Littler.) No, he is not. Under the Arbitration Act, 1889, he has, but not quite in all circumstances.

(Chairman.) I am bound to say this seems to me an arbitration where there ought to be power to state a special case; for instance, it is alleged that some of your extra charges are illegal.

(Mr. Littler.) I will tell your Lordship how that is always regulated. It is this, that the arbitrator gives his award on a certain assumption that there are certain legal rights; if he is wrong in that—and I agree that that, as a matter of machinery, is a convenient method—if he is wrong in giving it a certain

effect, then you cannot apply to move the Court to enforce the award, as a matter of course, in a summary way, but if the other side resist, you are bound to bring an action on it, and then on the action being brought the Court may inquire. I agree so far as that is concerned; I am sure I should advise my company that if it were desired to require that the arbitrator should state a case there would not be the least objection to that—but that is quite a different thing.

(Mr. Balfour Browne.) He can be compelled under the Arbitration Act, 1889, to state a case.

(Chairman.) Even if it is under the Lands Clauses Act?

(Mr. Balfour Browne.) Yes.

(Chairman.) I thought so, personally. Go on, Mr. Littler, with your argument.

(Mr. Littler.) If he improperly objects to evidence—just to amplify that—you can move the Court to set aside the award at once, or to restrain him from going on, because that is, as your Lordship knows, without any offence to the arbitrator, called in that case gross misconduct.

(Chairman.) Yes.

(Mr. Pope.) I am inclined to think, my Lord, with my friend, that although there is no specific power to call upon the arbitrator under the Lands Clauses Act to state a case, there is under the Arbitration Act, 1889.

(Chairman.) And the Arbitration Act of 1889 has been held to apply to an arbitration held under the Lands Clauses Act.

(Mr. Pope.) Yes.

(Mr. Balfour Browne.) I believe it has been decided.

(Mr. Littler.) The Arbitration Act, 1889, does not give it in all circumstances, but under the Arbitration Act of 1889, wherever he has the power to state a case, it has been held that that applies to the Lands Clauses Act, 1845.

Just one more word, and I have done with this precious clause. What did Mr. Dickinson think—that if they did not get the clause it would cost them from six to nine millions more. Now, my Lord, if that is so, that is deliberately by an Act of Parliament to wring from the Water Companies of London from six to nine millions of money even according to the estimate of the other side.

(Major-General Scott.) Where did Mr. Dickinson say that?

(Mr. Littler.) At Question 4783, "(Q.) I cannot quite lose sight of what you said in that report which was just put in; were you and were the rest of the Water Committee of opinion that unless the arbitrator had powers and duties of this sort the result might be disastrous to the London rate-payers? (A.) I think we have always thought that if we had an ordinary arbitration under the Lands Clauses Act with compulsory purchase and everything else, we should have to give them a present of six or seven millions"—I thought it was six or nine—"and we wanted to avoid that; we did not think that was right."

(Mr. Balfour Browne.) Who is that?

(Mr. Littler.) Mr. Dickinson. Your Lordship will remember just one other thing, and that was that it was said, as has been said more than once, that as a matter of fact, the latter clause, as they proposed it, in effect, accomplished for them all that the first clause did, which Lord Rathmore's Committee had rejected.

(Chairman.) I do not agree with them, but they said so.

(Mr. Littler.) If that is so, my Lord, then it is clear that if they had made that avowal before Lord Rathmore's Committee their clause must have gone then and there, and probably would have gone when the water companies had been heard, because the water companies had not then in detail been heard upon this matter, and Lord Rathmore said that they would keep an open mind in the matter.

Now, my Lord, I think and I hope that I have said all that I intended to say on this Lands Clauses question, but it is a matter, of course, of the most absolute importance, and, I venture to submit, that if the Commission came to the conclusion—of course they cannot bind Parliament—that that is a clause which it is unreasonable to suppose that Parliament would give them, there is an end of the whole question. If, on

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the other hand, it is thought necessary, those facts might be brought to the attention of Parliament, so that they may themselves be able to know what they are dealing with, and see how far this can be a reasonable thing. But this, which I have just been saying, does show that if the ordinary law is maintained by Parliament it is abundantly clear that, according to the County Council's witnesses, the purchase would be what they would not accept. Your Lordship will remember one or two questions were asked as to what they would and would not accept, and then my friend came and read that very cautiously drawn document in which they say, although they do not bind themselves to the actual words, at the same time the effect is that unless they get them, or something like them, they would not go on with their Bill. So much for that.

Now, my Lord, the next matter is if there is to be any purchase, and I am going to deal with this just simply to remind—at least I do not think it is necessary to remind the Commission of anything, because they have listened so carefully—but to put before the Commission this:—If there is that which is provided for in this very Bill, because they provide for it in the Bill, namely, the division of the districts, then where comes in, in any way, any saving to the public? Your Lordship will find in clauses 25 and 26 of the Bill the provisions with regard to the local authorities. There is a power to the County Council on the one hand and the extra-metropolitan councils, or either or any of them, and any one or more of the local authorities on the other hand, to enter into and carry into effect any agreement for the sale or transfer “of so much of “the mains, pipes, and works of distribution required “by the Council from the company as is exclusively “appropriated to the distribution and supply of “water within the extra-metropolitan county or “district of the local authority, together with the “rights and powers of supplying water therein, and “of making charges in respect thereof which will have “been transferred to the Council from the company; “the sale or transfer to any extra-metropolitan “council or local authority of any other part of the “undertaking or of any other waterworks which in “the opinion of the Council”—I stop at that place— “in the opinion of the Council.” Therefore it does not give much to the local authority—“is not at the “time of the sale or transfer required for the present “or future supply of water to London.” Then they may lease, then they may supply in bulk, which, of course, means that in each case the local authority will have to have the management and collection and all the expenses of superintendence, and that, my Lord, so far as I can make out, but I am not quite sure, might involve the division of the water companies into no less than 37 different parts. There are five or six county councils, and so far as I can make out there are about 81 other authorities, but certainly there are a very large number of other authorities. It is very difficult you know, my Lord, quite to follow the boundaries of the district councils as being within or without the water area; but as far as I can make out it is that, and certainly it must be something very close upon that. Of course there are all the different county councils; there are Essex, Hertford, Middlesex, Surrey, Croydon, West Ham, and Kent, all county authorities, that is seven county authorities. Then, in the event of no agreement being made, there is no power to call upon them to sell, and then there is a provision as to maintenance outside in clause 27. With those provisions, how is it possible to say that purchase is going to be an advantage?

But I will go a little bit further, my Lord, because I have taken the trouble to work out the case of the saving, and I had worked out, my Lord, not merely the saving, but I had worked out the money value, which, in my humble judgment, should be applied in dealing with Kent. But I came to the conclusion that, however carefully I might guard it, it might be said that I, on behalf of Kent, had presented these figures, and that Kent might by some ingenuity be thought to be bound by them. Therefore, exercising the same discretion as the London County Council themselves have, I have not worked out what I present as being the whole fair purchase price which I should be prepared myself to advise the Kent Company to put into a claim, but I can tell you it would be anything but a satisfactory conclusion for the ratepayer.

Now, my Lord, just remember the position in which the Kent Company is, applying this to the consumers' interest. At the present moment we have, you know, to meet a capital charge on 708,000*l.* of our 10 per cent.

stocks, which, of course, means 70,800*l.*, and we have to meet the capital charge on 160,000*l.* of 7 per cent. stock. Those two together make 82,000*l.* 82,000*l.* is what we have to meet. I leave out altogether our debentures, because it was assumed by some of the witnesses that the debentures would be taken over, and it is much more convenient to deal with it without confusing it with the debentures. We have an income now, after paying our debenture interest, of 105,000*l.* and some odd pounds. We are applying that to pay off back dividends at the rate of 4 per cent. per annum. We are paying off back dividends at the rate of 28,320*l.* a year. Now, at the end of the 23 years in which we shall have paid that off, we shall of necessity, if there is no new expenditure—I will deal with the new expenditure presently, taking that by itself—if there is no new expenditure, we shall have to reduce our water rates 26 per cent., but we anticipate—and you will find that in Mr. Dickson's tables—that in 26 years, which is only three years' difference, we shall have increased our population by 512,000 at our present rate of growth, our present population being 508,000, and we may take it that at our present rate of profit we should have got another 105,000*l.*, the same as we are getting now. But we shall, in order to earn that, have laid out again, according to Mr. Dickson, 803,000*l.*, and that we can raise, without the smallest doubt, at 3 per cent. That being so, if you deduct the interest of 3 per cent. on 803,000*l.*, which is 24,100*l.*, to take a round figure, you have left 80,900*l.* to go into the pockets of the water consumer, entirely in addition to the 26 per cent. that he has got by the reduction after the payment of back dividend.

(Major-General Scott.) I think you said deduct that sum of the interest from the 800,000*l.*, but it should be from the 103,000*l.*, should it not?

(Mr. Littler.) From the 105,000*l.*

(Major-General Scott.) I think you said from the 800,000*l.*

(Chairman.) No.

(Mr. Littler.) The 28,320*l.* ceases to be payable as soon as we have reached the end of our back dividends.

(Major-General Scott.) And that has to be deducted from the return on the new capital?

(Mr. Littler.) No, it is not deducted from the return on the new capital.

(Major-General Scott.) I did not hear you correctly. I thought you had made a mistake.

(Mr. Littler.) I am much obliged to you; all I say is, that at the present moment our income is 105,000*l.* Out of that 105,000*l.* we pay 82,000*l.* for our maximum dividend, the rest we are only entitled to ask for so long as we can lawfully claim back dividends. As soon as our back dividend is paid off, that 28,320*l.* a year is released, and must go into the pocket of the consumer; but in that time we shall have doubled our population, we shall have doubled our water supply, but we shall only have increased our outlay by 24,100*l.*, namely, 3 per cent. on the 803,000*l.*, which Mr. Dickson says we shall have spent in order to accommodate that new supply, the consequence of which is, that you have 80,900*l.* plus 28,300*l.* on something like 108,000*l.*, by which we must reduce our charges.

Now, my Lord, compare that with what would happen with London. It is impossible for them to reduce it; that they agree. Even if they get their own way about purchase, it is impossible for them to reduce it.

(Chairman.) Why should they not be able to do in Kent exactly what you will be able to do?

(Mr. Littler.) My Lord, they would not be able to reduce it, for this simple reason, that they have got to pay, not merely my 708,000*l.* and my 160,000*l.*, but they have got to pay me for the back dividends, and for those back dividends, taken at the value of those back dividends at the present moment, they would have to pay me 480,000*l.*

(Chairman.) They will be earning the same income that you are earning, and, therefore, will pay the back dividends out of that income.

(Mr. Littler.) Yes, my Lord, but look at what they will have paid me for my undertaking. That is where the difficulty comes in. Now, my Lord, that is the position in which the consumer will be.

The next thing with regard to that is, that they must go on. They have got, in addition to paying my

interest, to provide the sinking fund for paying off that 868,000*l.*, and, therefore, it is by necessity—in my case it must happen—

(*Chairman.*) Will the sinking fund equal the amount that they could save if they had paid you the value of your present income on the 3 per cent. table, and borrowed themselves at 2*l.* 14*s.* 6*d.*?

(*Mr. Littler.*) Yes, that is quite true, but then what they have got to do is—

(*Chairman.*) Then do not answer that question.

(*Mr. Littler.*) I say that if it were not for their coming, I should be able to borrow just as cheaply as they could do. My security is just as good as theirs, it is an absolutely ample security. Therefore, they must saddle me with the sinking fund, they must saddle me with the purchase spread over all this time with the back dividend.

(*Chairman.*) You do not borrow at 2½ per cent., you borrow at 3 per cent.

(*Mr. Littler.*) My Lord, I was assuming 3 per cent., but if I am left alone, my security is absolutely as good as that of the London County Council; so that, I say, under no circumstances can the consumer or the ratepayer be better off than he is now.

(*Chairman.*) Do you suggest, Mr. Littler, that if the arbitrator did his duty, he would value your 92,000*l.* a year of dividends on any other table than the 3 per cent.?

(*Mr. Littler.*) I say he would value it on a higher table than that, most decidedly:

(*Chairman.*) And ought to?

(*Mr. Littler.*) And ought to.

(*Chairman.*) Although a Kent shareholder, going into the market now, could not sell his share at a price that would produce more.

(*Mr. Littler.*) I am quite aware of that, but first of all he would sell it for more the very moment it is settled that the London County Council are not to buy.

(*Chairman.*) All the attacks of the London County Council seem to me only to have made your shares go up.

(*Mr. Littler.*) And, my Lord, I say, but for them my shares would have gone up more. I should certainly be very much surprised if an arbitrator did not give a higher sum than what it is in the market now.

(*Chairman.*) Why should he give a higher sum—there I want you to help me.

(*Mr. Littler.*) For this reason; for the very illustration I gave of Stockton and Middlesbrough. The Stockton and Middlesbrough 4 per cent. stock, of course, is worth infinitely more now than it was then. This is a stock which must accrete in value, that is to say, the same income will be worth more years' purchase every year as time goes on, because it will be more and more secured, because we shall be reducing our water rates, and there will then be the potentiality of increasing our rates up to the parliamentary maximum, if by any accident we did not go on getting our money. That is a thing which everybody considers, how far he has got a thoroughly well protected stock, for the very same reason that a preference stock will pay in the same concern where it commands a higher number of years' purchase than ordinary stock, not that it is worth a bit more, except that it is safer. And so when we begin to reduce our charges so as to be below the maximum, it is inevitable that that stock must increase in value, my Lord. I have answered your questions, but I do not like very much going into these matters, because they really are what we should have to discuss before the arbitrator himself when the time comes.

(*Chairman.*) As it seems to me, we must, as well as we can, without much help from either side, determine what the result of an arbitration is likely to be.

(*Mr. Littler.*) Yes.

(*Chairman.*) The only way in which you can determine what the result of the arbitration is likely to be is to see what the arbitrator ought to do if he is a just and fair man.

(*Mr. Littler.*) Yes.

(*Chairman.*) Then I think it is legitimate to say, "Ought the arbitrator to value these shares at a higher rate than the stock-market values them?"

(*Mr. Littler.*) Yes.

(*Chairman.*) I understand your argument to go to this, that they are so much better than any other stock, that practically he ought to value them as Consols, as 2½ per cent. stock.

(*Mr. Littler.*) Certainly, and I should represent that they were at least worth that before an arbitrator, and I say the arbitrator would be perfectly justified in coming to the conclusion that it was so. It is a reasonable thing to put before the arbitrator, and the arbitrator can only decide whether it is a reasonable thing to do when he has heard the whole of the arguments on both sides.

Now, my Lord, I think that that disposes of the whole of that matter. I had noted some matters which, I think, are of very considerable importance in Mr. Dickinson's evidence, but still your Lordship has had it so fully discussed, although not the particular points that I have noted, that I do not think it would be right for me to weary the Commission with regard to them; but, by the way, I would like to give you the reference, my Lord—because I have it under my hand now—to what they said, to the effect that under the Bathmore clause they could get the same as under the original clause. Your Lordship will find that at question 4787. Now, my Lord, just consider what this is to be. This is to be a purchase by the London County Council.

(*Chairman.*) Or some other body.

(*Mr. Littler.*) Or some other body; but as far as I can make out it does not seem to me that the County Council would be content if anybody else bought it—that is certainly the trend of Mr. Dickinson's evidence—but it is to be bought by some body, who is to reconcile the almost irreconcilable differences of opinion amongst all these different authorities. Is that likely to be good for the ratepayer in the future? I should think it is probable, it is likely, to be exceedingly bad. I have drawn attention to the other matters with regard to the purchase and the difficulty of it, and that I venture to submit is another matter which is of importance.

But now, my Lord, I venture to say one thing more with regard to this purchase. If your Lordship looks at the whole tenor of the questions and answers beginning with question 4998, it is absolutely clear, I venture to think, that they intend to abandon the Thames. If they abandon the Thames, then there cannot be any question whatever about what the financial result would be to the ratepayer. I venture to think that it is absolutely impossible to avoid coming to any other conclusion than that, after all they will revert to the old policy of calling the Thames water diluted sewage and so on. One cannot avoid knowing—it has occurred in the course of your proceedings, and it has occurred publicly—what took place yesterday afternoon in the Council, when the Bill was rejected. There is an old saying, *in vino veritas*, and, sometimes, *in ira veritas*, and yesterday afternoon the charges which were made against the Thames water as likely to have the effect of doing something to London like the Maidstone water did to Maidstone, make it clear that if they are sincere in what they said yesterday afternoon, they cannot have been sincere in what they said here in saying that the Thames water is water which they are prepared to take up to the capacity of the Thames, which they limit, of course, in a way that we do not. Now, my Lord, if that is so, if all London is to go for Welsh water, what is going to be the result on the unfortunate inhabitants in the district of the Kent Company, because they will have to come, I suppose, to some uniform rating, because that is what they say they want to have—they want eventually to have a uniformity of price, and they want to have a uniformity of regulation. Here is a district which has the water under its own feet, which is not open to the objection that there is in Hertfordshire, because the Kent County Council and the Kent authorities are not complaining, on the contrary, as you have heard, year after year they have come and asked us to take them in; they are asking us now to take them in, and we are only delaying because we do not know what is going to be the upshot of the whole of this business; we have there the water which we can get for 35,000*l.* per million gallons, and we are to be hooked on compulsorily to the taking of water, which is to cost 96,000*l.* per million gallons. It is obvious that the result of that must be disastrous, at all events, to the ratepayer in the Kent district,

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whether within or whether beyond the metropolitan boundary.

My Lord, I cannot venture, of course, to say what is going to happen in the future. I should think that anyone who reads what has taken place here even, and what has taken place elsewhere, will see that it is impossible to suppose, but that the real intention of the Council is to abandon the Thames and to go for the Welsh supply. My Lord, if they do, there is another thing which they do as far as the ratepayer is concerned—who is to pay for keeping up the Thames? At the present time the payments from the London water companies go far to keep up the navigation of the Thames; somebody will have to be rated for that, and I suppose the consideration of the financial result to the ratepayer is not to be confined to one particular ratepayer, and that would be a very serious financial result indeed to those who live on the River Thames. So that your Lordship sees again another of the ramifications and complications of this extremely complicated business.

My Lord, of course the answer may be, leave Kent out, but if Kent is left out there is an entirely new position of things set up. Of course, if Kent is left out, I have nothing in the world to say, I should have nothing to say, as Kent would have no *locus standi*, either as a council or as a water company; but, of course, that would introduce an entirely different set of conditions from those which have always been presented to Parliament, and certainly from the resolution of Parliament that if one of the companies was bought the whole of the eight should be bought. Of course, there again is another consideration, which when you come to deliberate on this matter, I do not envy your Lordship, for having to consider the very vast number of different matters drawing you in different directions, which will have to come under your consideration, but, as I say, if Kent is left out I am absolutely content; but if Kent is to be brought in, it is transparent, as it seems to me, that the result must be one of very serious financial mischief to the shareholders and to the county.

My Lord, with regard to the other matter of control, I have nothing to add to the wise words of Sir William Hart Dyke. I did not venture, when I was in a different capacity, to make any suggestion with regard to control, but, my Lord, I would venture to make in my present capacity one suggestion, and that is this—that whatever other power of control there is over the company the power of the company to control their consumers should be enlarged, that is to say, that they should have the fullest possible powers to prevent waste, and I go a step further, that they should be compelled by some superior authority to take care that those regulations are carried out. It would be of very great advantage to the public, it would be of very great advantage to the water companies themselves, and it would be of enormous advantage to the water ratepayer, because obviously, the less water that is consumed in the day the later and the longer will be deferred the necessity for going in for more capital; and the second advantage will be, of course, the sooner reduction from the maxima charged by the different companies. My Lord, again another advantage of it will be this: it is said that municipalities do not hesitate to enforce regulations of that kind more strictly than companies do, because they are not so much afraid of public opinion. I have no doubt that is so, and, therefore, it is that it would be desirable that the companies should be required, and expressly required, to take all such measures as may be necessary for reducing unnecessary waste, and that the Government department which has to undertake the superintendence of this great water question should make that one of the matters over which it would guard as well as the others which have been suggested.

Now, my Lord, I am very sorry that I have been so long in what I have to say, but I do hope—although I have added, perhaps, to the amount of labour that you will have to undergo—that I have been able to present some considerations to your Lordship, which may be worth attention when you come to discuss the matter.

(After a short adjournment).

(Chairman.) I understand that Mr. Littler has a short supplementary statement to make.

(Mr. Littler.) I will endeavour to say all I have to say in two or three minutes, but it is really an important matter, and I think I can give some information to the Commission.

(Chairman.) Please do so at once, without preface.

(Mr. Littler.) Your Lordship will remember, of course, that after the recommendation of purchase by Sir William Harcourt's Committee in 1880 showed that he thought that it was not only looming large in the air, but was almost *un fait accompli*, and it has become necessary for the City (the Metropolitan Board having then no jurisdiction in water matters, and the London County Council, of course, not having been born) to consider what course they should take in what they deemed to be the interests of the water consumers. The consequence was that they appeared by Counsel before the Committees which sat in 1886—first of all, I should say in 1885, when the Kent Company were in Parliament, they propounded the same principle which afterwards appeared in the clauses which your Lordship knows. But that Bill in 1885 was thrown out; consequently, of course, there was no decision either one way or the other. But in 1886 the Lambeth Company, the Southwark and Vauxhall Company, and the East London Company were all before Parliament, and the City then propounded the clause which was passed in all those Bills in that year. The course of things was that the Lambeth case came on first, and I then had to present the clause to the Committee on behalf of the Corporation; and what I said was this, at the bottom of page 20 of the proceedings on the Lambeth Company's Bill, "I am going to ask you to apply this principle to all the metropolitan Bills. They come this year for 150,000*l.*, they may come next year for 300,000*l.*, and supposing no scheme for purchasing is carried for some years to come, when they come to purchase they will be putting in their pockets, in the meantime—," and then certain figures are given which applied to that particular company—"this going not into the pocket of the man who subscribed the money, but into the pocket of the man who has found none of it." Then we say, "It may be applied in one of two ways, it may be either kept in hand, which is accumulating at compound interest to become the property of the public when the purchase arises; or it may be applied, from time to time, in purchasing the shares of the company in the open market, and so decreasing the amount of capital upon which the company will have to pay interest when the time of purchase arises."

Now, my Lord, that was the proposal in that Bill. We also had a proposal, I may mention, as to back dividends. We proposed that back dividends should be limited to six years, as it was in the case of the gas companies. Those were the two proposals of the Corporation. Then in that case I simply proposed this clause, and the Committee held that my friends had no right of reply upon me on that. The same happened with regard to the Southwark and Vauxhall, and the same occurred with regard to the East London. But then it must be said that in the case of the Southwark and Vauxhall and the East London, that they had the notice which I had given them, that we did intend to insist upon it if the Committee would give it to us in all the Bills, but in the Southwark and Vauxhall Company you see my learned friend, Mr. Pope, said he did not really understand what we wanted. However, the end of it was, my Lord, that after that, the same argument being used in each case—because I have looked carefully to see—in every case the provision is: "In the event of the future purchase of the companies' undertakings by a public body." That is what runs through the whole of these proceedings. I am now reading from page 7 of the Southwark and Vauxhall—and then the same thing happened in the East London at page 21. I think; and the result of it was that a decision was given on all the Bills together, and it was decided that the clause as then framed, namely, that the Chamberlain was to apply the money for the purpose of purchasing and extinguishing the share capital of the company, and for such other purposes for the benefit of the public as Parliament may from time to time determine. Your Lordship knows that that form was altered a little bit afterwards because it turned out that that was a very difficult way of carrying it out. In fact, the clause, no doubt, in itself is a difficult clause to carry out in any way. Now, my Lord, that was the position of things with regard to all three companies, and it was the imminence of purchase which was the groundwork on which the City instructed me to apply; and it was that which induced the Committee to insert the clause in these Bills, and it was then avowed that we intended to make that the principle to be applied so long as there was any prospect of purchase taking place. But it was distinctly stated, and I am sure there is no line to the contrary, either in this or in any other subsequent

case, that it was solely in view of what I may call imminent purchase.

Now, my Lord, the only other word which needs to be said on that is to remind the Commission that in the Staines Reservoir Bill and in the Southwark and Vauxhall Bill of 1898 and 1897 there the provisions, not as to the sinking fund I agree, but as to the contingencies arising from the purchase of the undertaking, are limited in one case to seven years, and in the other to ten, Parliament having apparently come to the conclusion that purchase was not quite so near as they had at one time thought. Now that is really all I have to say.

(*Mr. Balfour Browne.*) That limitation does not apply to the sinking fund.

(*Mr. Littler.*) I agree, I say so. With regard to the sinking fund, it has always been in the same shape.

(*Sir John Dorington.*) You have used the word contingencies, what do you mean by contingencies?

(*Mr. Littler.*) That is with regard to the value of the reservoirs themselves.

(*Mr. Balfour Browne.*) In the case of the purchase within seven years.

(*Mr. Littler.*) The reservoirs were not likely to be capable of earning anything for seven years. There is a provision, therefore, which was put in by Sir Joseph Pease's Committee that if they were purchased within seven years they were not to be deemed to have added to the value of the undertaking. So with regard to the Southwark and Vauxhall, the time calculated for the works there was ten years, and there was a provision that if those works were purchased within ten years they were not to be deemed to have added to the value of the undertaking.

(*Sir George Bruce.*) The price of them would have to be added.

(*Mr. Littler.*) Clearly the price would have to be added, but not a profit value. Now I only want to refer to two questions and answers on this before your Lordship, and one is the question and answer of Mr. Haward, Question 2773, and the question was put by Major-General Scott. "Even if they had to sell the shares by auction, do you think that such a thing as a sinking fund could go on under such circumstances, that the companies could be compelled to raise the money and then apply the greater part of the profits to a sinking fund for the benefit of the consumers?"—(A.) I have my doubts as to whether the sinking fund could be continued if the companies were to go on under a system of control, because the great argument which has been used with reference to the sinking fund has always been that the value of the undertakings of the companies should not be increased in the event of purchase, and the object of the sinking fund clause was to intercept for the benefit of the ratepayers any enhanced value that might accrue between the date of the application to Parliament for capital powers and the purchase date; but you could not use that argument for a sinking fund clause if the companies were to continue in existence and not to be purchased; the whole question of the sinking fund would have to be reconsidered if the companies were to be continued." Then, my Lord, Mr. Dickinson said very much the same thing, that the sinking fund could not be maintained after the purchase. What he said is at question 5206. It is in answer to a question put by Mr. De Bock Porter. "(Q.) The sinking fund will unduly force up the price?"—(A.) To a certain extent. "(Q.) So it would prejudice any question of future purchase?"—(A.) Yes, of course the sinking fund clauses all of them have been based upon the assumption that the purchase was in the near future?—"(Q.) It was only a temporary expedient put in to prevent the enhancement of the value of the undertaking?"—(A.) That is so. I think if there is any new system adapted, the whole sinking fund question will have to be revised." Now, my Lord, that is, I think, all I need there trouble you with as to the sinking fund, I will not make any comments. But also in those three Bills in 1886—the Southwark and Vauxhall, the Lambeth, and the East London—I, on behalf of the City, asked that the back dividends should be limited to six years. That was argued before the Committee, and then we asked for three things—sinking fund, auction clauses, and limitation of back dividends. The sinking fund we got, the auction clauses we got. Then on page 2 of the proceedings, after the decision

had been given on Tuesday the 13th April 1886, I said this—I asked about the auction clauses: "Then as regards back dividends, as you said nothing about it, I take it you do not intend to say anything about it?"—(*The Chairman.*) "We do not intend to say anything about it." So that your Lordship sees they refused to limit the back dividends in 1886, and so far as my knowledge goes, it has never been attempted to be argued since. I am obliged to your Lordship for giving me this opportunity of explaining the matter.

Mr. BALFOUR BROWNE, Q.C., called to address the Commission.

In order that I may not stray into by-paths such as were mentioned by my learned friend, Mr. Pember, I go back to the instruction to this Commission to see what the real questions before you are; and I find that the first question you are asked is:—"Is it desirable, having regard to financial considerations and the present and prospective wants, in the interests of the ratepayers and consumers, that the undertakings should be transferred." Therefore, first of all, my Lord, the question you have to consider is whether in the interests of the consumers and ratepayers it is desirable to transfer them, and secondly you are only to consider the financial considerations in relation to present and prospective wants. Now I can conceive, my Lord, far more important questions being sent to a Royal Commission—many of them of course like considerations of public health and general policy, which might have been sent to you, but they have not been submitted, and therefore, my Lord, I will confine myself to that part of the reference when I come to deal with it. The second matter is, if transferred, is it to be one authority or to be several authorities? I mean to ask you to find that in those interests, the interests of the consumers and the ratepayers, having regard to the financial considerations and future wants, it is desirable to transfer the undertakings, and I will also ask you to find that it is desirable to transfer them to the County Council for themselves, in the Administrative County of London, and as trustees for the outside, either to sell again to those persons and bodies outside who are the water authorities, and who may become the water authorities, and I include in that the County Council, or if they desire to continue to be purveyors of water, in bulk to them, and let them distribute it.

My Lord, the next matter is as to the question of severance, and the practicability and desirability of that. With regard to that, I think, physically, there can be no difficulty whatever. It is a matter, my Lord, that is done every day. There is a model clause that my friend, Mr. Pope, knows very well, introduced into every water Bill where a transfer takes place giving all the outside authorities a right to hive off, and a right to purchase their mains, pipes, fittings, and apparatus in that district. That is the model clause, and it is introduced into a dozen Bills every session.

Then, my Lord, the last thing that I find upon the reference is: "If the undertakings are not so acquired, whether additional powers of control are necessary, and what those should be." My Lord, as I understand this reference, it is this: either control or purchase. Now I am going to show you, my Lord, that control, if it is to be any good at all, must be a control which, in our interests—the interests of the consumers and ratepayers—would be a serious detriment to the companies. They are or were intended to be profit-earning companies. Any control that you put upon them must, I agree with the remark made by Lord Robert Cecil, be something in addition to the general law. I do not agree with him that you are likely to recommend such a fundamental alteration of the general law as to underground water as to upset *Chasemore v. Richards*. I do not think you will do that. But all the control I will suggest to you will be an alteration of the law against these companies, and it will cost them millions of money. My Lord, you once said in the course of this inquiry, "If you controlled the companies in the way you suggest, the London County Council will be on velvet." We would. But as was said in answer to your Lordship at that time by Mr. Dickinson, that is not our proposition. We do not propose to cripple the water companies before we buy. We propose, however, to purchase them having regard to all the circumstances of the case, having regard to all the disabilities they labour under to-day, and to give them the value, the fair value, for their undertakings. I can conceive a time, my Lord, when a very

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improper request might be made that we should control first and buy afterwards. My Lord, I am glad to say that, standing here for the London County Council, we make no such proposal as that; I think it would be hard upon the companies. But let me say this, my Lord, if you report in favour of control, if you put any of the control that I am going to suggest to you upon these water companies, you cannot baulk the ambition of the people of London; and some day the people of London may say, "We will still demand the purchase of these water companies, and we can buy them cheaper now than we could in the year 1889." Therefore, I say, my Lord, you must look to the future. If you control them in the way I am going to suggest, it will be drastic; it will be in the interests of the consumers of water; it will cripple these companies, and if at any future time they come to be bought, they will be bought cheaper. But that will not be our doing; it will be yours by putting control upon them. My Lord, we know control quite well, it has taken place in the past in various directions. Take, for instance, the raising of money by auction clauses. Formerly these companies had a right to distribute among their shareholders at par, shares which were worth, we will say, 200*l.* The 100*l.* went into the pockets of the shareholders; but the consumer of water was worse by reason of that fact. Parliament has controlled them already. It has put the auction clauses upon them as upon every other water company in this country. What is the fact, my Lord, that from 1872 the London Water Companies raised 50 per cent. of their whole capital at par, and that the premiums upon that capital amounted to 1,853,285*l.* If that had been raised by auction, there would have been close upon two million pounds of capital in these undertakings bearing no dividend at all. My Lord, when the companies praised their own management, as Mr. Boulnois did, let me point out that all that time when these other companies were raising this capital in that extravagant way for the consumer, the East London was doing it by auction clauses. One of the companies did its duty, the seven others went and put all this capital into the pockets of their shareholders—two millions of money—and we, the consumers of London, are worse to-day by reason of that by two millions of money; and the time when we can get any reduction in the price of water is postponed by reason of that. My Lord, that shows the necessity for some control, and some drastic control. If Parliament had only said in 1872 "auction clauses," and controlled them to that extent, the shareholders of these companies would have had 1,853,000*l.* less in their pockets than they have to-day, and the consumers would have had that amount extra. And, my Lord, let me point out that in contrast with the seven companies the East London (having their full legal powers, just as much as the other companies to distribute capital amongst their shareholders) spread their capital by auction clauses, and their capital is smaller to-day by reason of that fact. So much, my Lord, for one matter of control.

Let me take some other illustrations very shortly. The West Middlesex had at one time accumulated large sums, namely 107,725*l.*, and had it on deposit in the Bank. This is the way they look after the interest of the consumers. If instead of having 1 per cent. from the Bank, they had only done it by borrowing powers, the consumers would have paid 3 per cent. less. Now, what took place on that? Again they have to be controlled in the interests of the consumers. We went to Parliament and Parliament made them take out of that 107,000*l.*, 52,000*l.* and 7,500*l.*—60,000*l.* in all—out of their own accumulated savings carried back into capital, and in the same Bill reduced the borrowing powers from 500,000*l.* to 440,000*l.*—the 60,000*l.* being made up out of their own savings. So much the better for the people of London. We are 1,000*l.* a year better by reason of that action of Parliament against the West Middlesex Company. But they did not do it of their own accord. You heard what my learned friend, Mr. Pember, said, and your Lordship said you thought he was in a tight place, and that he had to give it away. Parliament did it, and to the extent of 60,000*l.* protected the consumers of London.

Audit, my Lord, is another illustration of the necessity for some control. I am not going into details, but you know about the main of the Southwark and Vauxhall Water Company. It had leaking joints. I will not say it was defective in the first instance—I will say the ground was not what they thought it would be. But what did they do? They wanted to carry the whole of that cost to capital, and the auditor

had to step in and to divide it and give properly what was due to capital and also what was due to revenue.

Now, again, with regard to one question of management, let me refer to a table handed in at question 2404, which shows the cost of management of one company as compared with another, and it shows, my Lord, that the companies which have paid their back dividends and have nothing more to gain and are now entitled to be extravagant out of the pockets of consumers, do manage their affairs more extravagantly than others. If you look at it, my Lord, you will find that the Southwark and Vauxhall only pays 387*l.* for the cost of management per million gallons. The East London, 539*l.*; the Lambeth, 610*l.*; the Grand Junction—now we are getting up—we are getting to the more solvent companies—792*l.*; the Kent, which is paying its back dividends, 828*l.*; the Chelsea, which is paying its back dividends, 895*l.*; the West Middlesex, which has paid all its back dividends, 988*l.*; and the New River, 1,247*l.*

(Chairman.) What question is that?

(Mr. Balfour Browne.) Question 2404, Mr. Haward's evidence. My Lord, they try to compare each company within itself, but this is a comparison of the companies that have nothing to gain by saving, with the companies that have; and it shows, my Lord, that when companies have paid their back dividends, like the West Middlesex, they are no longer really in the position of companies; they are simply managing the concern for a salary in the interest of the consumers of water. They have ceased to be a company. They get a salary for managing it, and everything else comes back to the consumers of water in the form of rebate. They are no longer a trading company; they are paying their 10 per cent., or whatever it may be, and they have no object in saving the money; that is why these sums are so large.

Now, my Lord, I go to another table which was handed in at question 25,380, and it is a table your Lordship had before you which shows the curious comparative results as between a company paying its back dividends and one not paying its back dividends. The last table was with regard to management, this is with regard to maintenance. It is a most significant table. I am not blaming the companies. I am only speaking of what must necessarily result from this system. You will remember, my Lord, that there was a long time when repairs and renewals charged to revenue were nothing. You will remember the table contains a long gap. Now when you come down to the year 1887, when they had paid their back dividends, they at once began to spend upon reconstruction of filters and every year after that time large sums are spent upon maintenance and repairs. Now, my Lord, I do not say that that is improper, but I do say that the scamping it in the years when they could divide the money was improper. They scamped it all those blank years, while they could put the money into their pockets; when they have finished everything and can spend on maintenance and repairs out of the pockets of the consumers of London, of course, they do it well. Anybody would do so much, my Lord, for that matter.

(Chairman.) I think in fairness I ought to remind you that, unless my memory deceives me, the witness who came for the West Middlesex denied that inference and said those were renewals of engines which became necessary at that time, and that it had no connexion whatever with the fact of the back dividends.

(Mr. Balfour Browne.) He thought that our allegation was that they were spending too much in those years. Our allegation was not that, and it was proved by our table—it was that they scamped in the years when they could divide the money. I do not deny that those are very proper things to be done, but why are they all put into the years when it all comes out of the consumers' pockets? Why were not some of them done out of the pockets of the shareholders? Because they wanted to divide that money.

Now, my Lord, I have only indicated some points upon which it is quite obvious control may be called for. I am going to indicate a great many others. You will remember, of course, that all the water companies deprecated control—every one of them, and I do not wonder.

(Mr. H. W. Cripps.) What witness said so?

(Mr. Balfour Browne.) All the witnesses for the water companies deprecated control, and I say I do not wonder. There were two or three suggestions which

are trivial; one that the water examiner should have a right of access to the works; we know that the water examiner has never been refused access to the works, and merely to turn a courtesy into a right does not I think advance matters very much. I am sure this Commission, which has sat for two years nearly, will not merely make that recommendation that the water examiner should have a right of access. There is another suggestion made—a milk and water suggestion, that there should be two persons to represent the County Council put upon the boards of all these companies.

(*Mr. Pope.*) Who suggested that?

(*Mr. Balfour Browne.*) Sir John Lubbock, I think, suggested that.

(*Mr. Hollams.*) He was not a witness for us.

(*Mr. Balfour Browne.*) I entirely differ from his suggestion.

(*Mr. Pope.*) So do I.

(*Mr. Balfour Browne.*) In the first place, I think it would be most silly, it would be no control; it would be a system of spying or espionage which is disagreeable and improper. I cannot agree with that control; it would do no good. It is suggested that there is some analogy between that and the Director for the Government on the Indian Railways. But there is no analogy whatever. The Indian railways are guaranteed by the government and the government gets a share of the profits after 5 per cent. Everything after 5 per cent. is divided between the government and the shareholders. There the government is in a sense a shareholder, and of course, has a right to a director. But the companies, I think, are right in deprecating control altogether. If there is to be control, my Lord, I say it must be control in the interests of the public—not in the interests of the water companies. If it is to do any good at all, it must be drastic; and if it is to be drastic it must prevent those companies earning the same profits they have in the past; it must be expensive to them.

Now let me suggest, how, my Lord, I am not going into the great controversy that has raged as to how the proviso got into the Acts allowing companies to abstain from competition. Remember that is all it does. It still leaves the companies free to compete. I can quite conceive, my Lord, that that proviso might be repealed by Parliament. Now we come to something like control. This is better than two directors on the board. What would this do? It would give every person in the district of two companies a right to select his water from the cheaper of the two. My Lord, would not that have a salutary effect in the interests of the consumers? I say it is dead against the interest of the companies, and what I am going to show you is that control is impossible if these companies are to exist really as profit-earning entities at all. My Lord, if that were done—if that proviso were taken away and I had a right, being in the district, of we will say, the West Middlesex and the Lambeth, to say to the West Middlesex, "Supply me with water." What would be the result? The County of London has 121 square miles in it, over 112 of those square miles, the companies overlap. Therefore, there would be competition and the company that has the highest rates would have to take the same rates as the lower company. Take two illustrations, my Lord, from the evidence. In Wandsworth, Putney, and Battersea, the Southwark and Vauxhall supply. They charge for the supply of those districts 53,540*l.*

The West Middlesex have a right to supply to-day; and if that proviso were repealed, the people in those districts could compel them to supply. What would be the result of that? The West Middlesex, even without the rebate, could only charge 41,579*l.* Therefore the people in those districts would gain 11,961*l.* per annum. My Lord, capitalise that, and you will see what a very large sum that would be in the pockets of those people in that district. You will find that, my Lord—I will not turn it up—in the evidence of Sir Henry Knight, at question 25,101. Take one other illustration, which bears on this question, but also bears upon another important phase of this question. In the East of London there is a district which is common to the East London Company and to the New River Company. It contains 237,000 people. It is supplied by the East London Water Company. If the New River had been supplying last year in that district, there would probably have been no famine in the East of London, because the New River had lots of water and could have

supplied. But they preferred to hand over the water to the East London because they were paid for it, and the East London charged those poor people 11,912*l.* more than they would have paid to the New River Company. If the New River Company had been compellable to supply that district, the people would have had the water first of all, which they did not get from the East London.

(*Mr. Pope.*) No, not first of all. The mains would have had to be laid for them.

(*Mr. Balfour Browne.*) True, but that would have been done in the last water famine, and we would have been all right in 1898. They would have had the water, and they would have paid 11,912*l.* less to the New River Company than they paid to the East London for the want of water. My Lord, does it seem an unreasonable thing, if these sort of famines are to go on, that Parliament should, in controlling these companies, say, "You shall transfer; you shall no longer have the protection of that proviso; the people in that district shall have a right to say to the New River, 'You have got the water; you shall supply us, and you shall supply us at your Parliamentary rates'?"

(*Mr. Pope.*) I do not want to interrupt my friend or say anything except that this is a little inconvenient, for this is the first time these suggestions have been made.

(*Mr. Balfour Browne.*) Forgive me.

(*Mr. Pope.*) You were asked distinctly by the Commission what you had to say about control; you said you had no suggestions to make about control, and now, when we cannot reply to these suggestions, they are made.

(*Mr. Balfour Browne.*) I have been suggesting these things all through.

(*Chairman.*) I am bound to say that one, at least, of the County Council witnesses, to my infinite astonishment, gave me these very things as kinds of legitimate control.

(*Mr. Pope.*) I had not noticed it.

(*Mr. Balfour Browne.*) And may I say, my Lord, that I cross-examined their witness, Mr. Bowles, upon this.

(*Chairman.*) Yes.

(*Mr. Balfour Browne.*) That was at Question 22,558. I do not know, my Lord, why you say "to your astonishment"?

(*Chairman.*) To my astonishment, because it does not come within what one ordinarily understands as control. This would be fresh legislation altering the existing position and legal rights of the companies.

(*Mr. Balfour Browne.*) My Lord, there is no control that will not alter the legal position of the companies.

(*Chairman.*) Yes, but one understands, at least, I understand, by control, that this refers to the supervision and interference of some outside authority regulating the daily acts of a company, but not legislation altering the whole status of a company.

(*Mr. Balfour Browne.*) My Lord, the word "control" is used in a very wide sense.

(*Chairman.*) I do not quarrel; all I can say is it was a new idea to me. It enlarged my view.

(*Mr. Balfour Browne.*) I should venture to say that is the sort of control that the Government, in asking you to advise them about it, had in mind.

(*Chairman.*) Possibly.

(*Mr. Balfour Browne.*) They may have meant the very largest control possible.

(*Chairman.*) Possibly, yes.

(*Mr. Balfour Browne.*) And remember this is not like altering the general law of England as Lord Robert would have you do.

(*Chairman.*) No, I agree.

(*Mr. Balfour Browne.*) This is merely repealing a proviso that those companies got inserted against, as I say, the interests of the people of London.

(*Chairman.*) You say "got inserted." You should say that Parliament inserted.

(*Mr. Balfour Browne.*) No doubt, but it was done at their instance.

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(Mr. Pope.) No.

(Mr. Balfour Browne.) And, remember, the curious thing about that, whether it was done by Parliament or not, Parliament allowed those districts still to overlap. As I have told you, out of the 121 square miles 112 are overlapping to-day. What was that for? To allow the companies to compete if they liked, and we know they are competing in certain places. We know that where estates are being laid out in the district that is common to the Lambeth and Southwark and Vauxhall, the Lambeth has to take the Southwark and Vauxhall rates, or it goes without the builders' contract.

(Mr. Pope.) They do not go to the Southwark and Vauxhall if they do not go to the Lambeth.

(Mr. Balfour Browne.) I do not follow. I say it is proved that the Lambeth Company, if they want to get the trade of the builder who is building on an estate, must take the Southwark and Vauxhall rates, otherwise the Southwark and Vauxhall would, of course, get the contract, and that is proved. But what have we further proved? That in the case of the Croydon the Lambeth came down to the rates of the Croydon Corporation, not for the reasons stated by Mr. Wilkins, but for other reasons, which were afterwards admitted as a correction. There is, therefore, actually a competition existing in certain streets to-day, and to the benefit of the consumers. My Lord, why should there not be competition? Competition exists in the case of railways; it is encouraged in the case of electric lighting, after a very careful report by Sir Francis Marindin to the Board of Trade; and we know that, taking Pall Mall and the St. James's Electric Lighting Company's Bill, which was only dealt with yesterday, that company is competed with throughout its whole district. Why should there not be competition in water where two companies have got mains which can supply? Competition is not quite played out yet. What is the Government proposing to do with regard to the telephones? To compete. Therefore, my Lord, we have the potentiality of competition. We have got these overlapping districts. Sweep away that proviso if you really mean anything, and that will be real control, and the result would be disastrous to the water companies; and that, as I have said before, and I say again, is not our proposition. But if I am not to have purchase, the alternative is control; and then I say all those controls are essential in the interests of the consumers of London.

Then, my Lord, though it is rather out of order, let me say how competition affects, to my mind, the question of price of purchase. It is quite obvious, my Lord, that, as they have admitted, where they have mains in the same street, they take the same rates. It is quite obvious, therefore, that the maintainable income of the Lambeth Company in a street where the Southwark and Vauxhall pipes are is not so high as it would be in a street where the pipes were not.

(Chairman.) That is not admitted. You must not say that.

(Mr. Balfour Browne.) Yes, my Lord, forgive me.

(Chairman.) No, the Lambeth witness said distinctly we charged those rates in that competition district before the Southwark and Vauxhall Company came at all. We did not raise our rates when, in 1852, we got our 7½ per cent. We have left them at the same level. We did not revise them in consequence of the Southwark and Vauxhall.

(Mr. Balfour Browne.) That is not what I was on, my Lord. I say that in that street the maintainable income of the Lambeth Company, take the 20 houses in that street and 20 houses in another street where there is no competition, the maintainable income from the 20 houses in the competitive street is not so high as the 20 houses in the other street.

(Chairman.) No.

(Mr. Balfour Browne.) Therefore, there would not be so much to multiply in that street. Further than that, my Lord, it is quite obvious that the income is not so well secured where there is a possibility of competition as where there is none. Therefore, I should say that any arbitrator, taking into consideration the income of one of those companies, would say, "It is quite true that there has been no competition for a long time, and there might be none for a good number of years to come, but I must take into consideration the possibility of competition, and I will have to make up my mind what number of years' purchase less the income

"is worth in a district where there is competition than where there is a monopoly." My Lord, as I said, that was a little out of my beat, but I thought I would just mention it and pass from it, because I am still on control.

Then, my Lord, it is quite certain that the present supply will have to be supplemented in 10 or 15 years. The new sources may be at Staines, or they may be in Wales. In either case, there must be very large expenditure involved. How are the companies to raise the money? If upon terms remunerative to them—that we will say is without the sinking fund—it would be an injury to the consumer, because, of course, we can raise the money cheaper than that. If it is to be remunerative to them, it must mean profit to them. We would raise it without profit. If there is to be a sinking fund—and I will argue very strongly that the sinking fund, although it may have been thought to be a temporary measure, cannot be gone back from now—if there is a sinking fund, then it is not raising the money as a company at all, but it is raising it as trustees for the consumer.

Now, I do not know that anybody ever heard of a trading company being a trustee for the public for half its concern; and yet that is what it would be. I can quite conceive on one half of its capital it was receiving dividends, on the other half it was merely managing for the consumers of water. But would you like a trading company to be the trustee for the consumer? I should prefer that the consumer should elect its own representatives, and have its own governing body to be the governors of that undertaking. And it is contrary to all precedent. I do not know that there is such a case anywhere where a company has had to raise large sums and hold them as a bare trustee for the consumers of water.

My Lord, again, if they are to continue, will not further regulations as to the filtration of water and storage be necessary? Lord Balfour's Commission pointed that out. If these are carried out, that must necessarily involve the companies in great expense without further remuneration, because, if it is merely to make their present supply more pure, they are paid for the dirty water just now, but they would not be paid a bit more for the clean water in the future. All the storage, all the filtration, would only put them in a position honestly to earn the money that they are getting to-day; and, therefore, again, that would be drastic control, and it would put those companies to very serious charges in order to carry out their statutory duty. Control may say, apparently, "You, the East London, failed in the drought of 1898; make reservoirs to meet that event in the future." Suppose that is done. Suppose the East London, even taking the first word, come for a Bill to do it this year, that does not increase their revenue. It is only to make good what was defective last year. It is quite true they may at the same time make reservoirs which will not only tide them over a drought, but which would also give them an increase when the population increases; but to the extent that they are merely making up leeway that is control, putting large charges upon the company for which they will not get a penny of money, and all this control is so drastic that I say it would cripple, and probably ruin, some of these companies, and I do not think it is a fair thing to do to cripple them and ruin them before we purchase.

(Sir John Dorington.) That class of control is in operation already, Mr. Balfour Browne, is it not?

(Mr. Balfour Browne.) Not exactly. There is no power to make a company go to Parliament and get powers to make reservoirs.

(Sir John Dorington.) They have an obligation to supply, which they have to fulfil.

(Mr. Balfour Browne.) They have an obligation to supply, that is true; but that does not compel them to go to Parliament to get reservoirs. They failed, and you may take them and fine them before a magistrate for the failure; but you still have to pay the rates, whether they supply the water or not. It is very ineffective control in the meantime, and it was suggested in the course of this case that it might be trusted to some Government department to say, "You have failed in this particular drought-year; you are to go and make reservoirs which will tide you over such an event in the future," and that does not seem an unreasonable thing.

(Major-General Scott.) Has not a Government Bill gone to Committee?

(Mr. Balfour Browne.) To compel them to take more water?

(Major-General Scott.) Giving that power.

(Mr. Balfour Browne.) I think not so far as that. In fact it seems to me almost an impossibility to give this power, it is so drastic. Suppose the East London are not making any dividend at all, and the Government Department say, "You shall go and spend a million of money on a reservoir," they could not raise it. The Government may order, but if they have no dividends, they cannot raise the money. The control, to be effective, is so drastic, that it cannot be carried out. On the other hand, if you had the rates of London behind you, then, of course, you could make your local authority, if it failed in its duty, carry out the work and supply the water.

(Chairman.) How could you make them?

(Mr. Balfour Browne.) I mean after the transfer. Your Lordship asks in what way.

(Chairman.) Yes, how could you make the London County Council proceed to construct reservoirs on the Lea?

(Mr. Balfour Browne.) You might, I say, have such control over a local authority, but you could not put it over a company. There is no such thing existing just now in either case.

(Chairman.) No; I should think it would be much more difficult to control the London County Council than to control the East London Company.

(Mr. Balfour Browne.) There is, of course, a large power of control—I do not know how far it refers to the London County Council—but there is a large measure of control over all local authorities in the hands of the Local Government Board, and we know quite well that the Local Government Board continually compel local authorities to do this, that, and the other thing, either for sewage, drainage, water supply, or otherwise, and they have a power, I believe—I cannot remember the section at this instant—of applying for a mandamus to make them.

(Major-General Scott.) Has not a Government Bill gone to committee, Mr. Balfour Browne, which gives the Local Government Board power to require a company to put itself in a position to supply other companies?

(Mr. Pope.) Yes.

(Mr. Balfour Browne.) Yes; that is totally different.

(Chairman.) As far as inter-communication goes.

(Major-General Scott.) Not only inter-communication, but to have a reasonable surplus to supply other companies.

(Mr. Balfour Browne.) A surplus to supply other companies! I should doubt it very much. I have not read the Bill through, my Lord, but I should doubt it very much. I have the Bill here, but I have not read it. It would seem to me rather a monstrous thing to make, for instance, the West Middlesex hold a surplus of water for the supply of the East London, if it wanted it, which it might never demand, and it would seem to me monstrous to say, you shall have a big reservoir ready in case the East London wants water. But I do not know the Bill, I have not read it, and therefore, I will pass from that.

(Mr. H. W. Cripps.) Your point would be that the local authority would have no interest whatever in not doing so.

(Mr. Balfour Browne.) That is so.

(Mr. H. W. Cripps.) They would have no interest whatever; they have the public to look to, but the company has its shareholders to consider.

(Mr. Balfour Browne.) Quite so, and it has also, of course, the money market to consider. Suppose, for instance, that a Government Bill were introduced to say that the eight companies shall go to Wales and have a Welsh scheme, I do not hesitate to say that although Parliament, by both Houses, ordered that to be done, the answer of the companies would be, "we cannot raise the money, and we will not go."

(Mr. Hollams.) We could raise the money in half an hour.

(Mr. Balfour Browne.) I do not believe they could raise the money for the Welsh scheme. If it is 52 millions of money, as Mr. Pember says, the thing is absolutely out of the question. These companies could not do it, especially with a sinking fund.

Now, my Lord, the next matter that I say on control is this. Since Lord Balfour's Commission Report, the companies have either had authorised or have spent 5,420,000*l.* of capital. The greater portion of that—I forget the figure just now, but it is in Sir Alexander Binnie's evidence—I think it is 4,000,000*l.*—is absolutely unremunerative. It is not to get new water, it is merely to make up for defects that existed before that time. Now, if these companies, since Lord Balfour's Commission, when they said they had plenty of water to go on with, have had to spend anything like that money unremuneratively, merely to carry out their obligations to London, a very heavy burden has been put on them. They get no benefit from it. It is merely to carry out their statutory duties, and if that has been done in the past, a great deal more has to be done in the future. I see Mr. Pember, in speaking only yesterday, said that the commitments of the eight companies together came to over 13 millions—I forget the exact figures, but I have it later in my notes.

(Chairman.) Yes, that is quite right; it is 13 millions.

(Mr. Balfour Browne.) Now, first of all, my Lord, the very fact that since that Commission they have spent four millions on unremunerative works shows first, that they were in default—that those works were defective. 5,420,000*l.* was the total capital sum, and 4,000,000*l.* was the unremunerative expenditure. It also shows that control in the public interest, to be of any use at all, must be very drastic, because here they have had to spend this out of their own pockets—out of the pockets of their own shareholders—in order, not to earn any more dividends, but merely to make themselves safe to supply. Again, my Lord, take another question of control which it seems to me would put them to a large expense. Would it not be perfectly fair, my Lord, to introduce a Bill into Parliament for Government, if it is to control, to say that all the pipes in the streets should be 2 feet 6 inches below the surface. They say, first, it is the fault of the consumers, and that the frost generally attacks the service pipes. Now that is obviously a fallacy, because the consumer's service pipes must start from the main, and the level of the consumer's service pipe must be regulated by the position of the main. Again, they say they are protected from the consequences of stoppage of water caused by frost. They ought not to be if the pipes are frozen, not in consequence of the frost, but in consequence of having been improperly laid too near the surface. It is all very well for one gentleman to say, as Mr. Wilkins did, that it depends very much upon the amount of flow through, and the rapidity of flow through, whether it freezes; they ought to have all their pipes in such a position that the frost cannot affect them. Again, my Lord, I say that that would involve them in enormous expense. Your Lordship has suggested to one of the witnesses—and this again is serious for the companies—that if no supply is given, there ought to be no rates charged. It seems to me a monstrous thing because these companies have been empowered to tax the community or to make charges in the form of a tax, that they should be able to get money from people and not supply the water, and yet that is what occurs. For weeks and months people have had to pay rates and get no water from one company. Is it an unreasonable thing to say, if you are going to control at all, that one of the very first provisions you should make is, "no water, no pay"? Again, a loss to the companies. But all these things accumulate so much that you would find, as I say, that you would ruin the companies if you want to control them effectively. Again, my Lord, what was mentioned to-day? My learned friend, Mr. Littler, talks about prevention of waste. Ought there not to be regulations for the prevention of waste? Most assuredly. The companies say, "No, it is cheaper to waste than to watch." But the result of that is, my Lord, that London itself is injured. More water is taken from the Thames than is necessary to be taken, or, if it were the Kent Company that was wasting the water (I do not know which it is; they may all be wasting it for anything I know), more water is pumped from underground and, therefore, a greater expense than is necessary; and that again postpones the time in which the consumers of water in the Kent district would get the benefit of the reduction of price. I believe it is mostly with regard to the Thames the complaint has been made with regard to the waste and in consequence of not watching; but we know, my Lord, that the first great prevention of waste took place in the

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hands of the Corporation of Liverpool. Mr. Deacon gives his name to the meter that detects the waste. He set to work and he enormously reduced the amount of water per head of the population. They are bound to do the same because we complain that the Thames is denuded. I think that it would be beyond, probably, the intention and the scope of this inquiry to go into the question of the Thames and the supply. But, leaving out the water companies, is not London as a town interested in having as much clear and pure water come down through London as possible? If it is merely to be pumped to waste, the river is denuded without any good being done, and all because the companies find it cheaper to waste than to watch.

(Mr. Pope.) Where do you find that in any competent or authoritative witness on the part of the companies?

(Mr. Balfour Browne.) Mr. Fraser said so.

(Mr. Pope.) But it has been repudiated over and over again.

(Mr. Balfour Browne.) Indeed not—not from the beginning. The Balfour Commission stated it and found it, and it has been quoted here repeatedly.

(Mr. Pope.) I will not interrupt you, but if that is a sample—

(Mr. Balfour Browne.) I am within your memory, my Lord?

(Sir George Bruce.) I think that referred to one company.

(Mr. Balfour Browne.) It referred to one company? I do not know why it should refer to one company more than another.

(Sir George Bruce.) I mean the witness said it with regard to one company.

(Chairman.) One company found it cheaper to pump than to stop the waste, I forget which it was.

(Mr. Balfour Browne.) It was Mr. Fraser who said it.

(Mr. Pope.) It was the Grand Junction Company.

(Mr. Hollams.) Mr. Fraser is now dead.

(Mr. Balfour Browne.) I did not want to mention that gentleman, because he is no longer with us; but he said so, and I believe it. But I say you will prevent waste if you are going to control them. You will prevent them doing the cheap thing. You will make them do the dear thing to prevent waste, and that will cost them money.

(Mr. Pope.) They are doing it without compulsion.

(Mr. Balfour Browne.) They say so now. Again, there ought to be equalisation of rates without doubt. I think it is a very great anomaly to find that in the poorer districts of London the rates are higher than in the richer districts. I find that in West Middlesex, a man can have two baths, the first for 8s. and the second for 4s. in his house; that is 12s., subject, of course, in that case to a 10 per cent. discount, but I leave that out, because I am not going into minute matters. In Lambeth, those two baths would cost him 30s. That you will find in the evidence of Mr. Boulnois. As to houses where there is competition in certain districts and certain streets, the charge on them is 1l. 9s.; where none the charge is 3l. That is in Mr. Wilkins's evidence, Question 27,399. Now equalisation of rates would mean that some companies would have their rates reduced and largely. We have had various figures mentioned. But the equalisation of rates in London bringing down all the companies to the level of the lowest would mean a loss of 250,000l., one gentleman said, another, I think, 160,000l., whichever it is, it is an enormous amount of money. It is a lowering of the rates of the company. But it has been done before. The rates are not sacred. My learned friend, Mr. Pember, talked about the "National word," as if Parliament pledged itself to the companies for all time to allow those rates to be charged. We know it is not so; that most of the Acts of Parliament given to these companies contain the ordinary clause, that this Act shall be subject to any general legislation to be hereafter passed, and my learned friends were, I am sorry to say, wrong, when they talked about the Railway Regulation Act, 1888. That gave the Board of Trade power to alter the whole of the rates of the railways in this country. The only limitation upon the power of the Board was that the rates to be charged should be just and reasonable. Those are the words of the Act. My learned friend, Mr. Pope, when Mr. Pember was speaking, said that one of the criteria used,

was to maintain, as far as possible, the income the company had been getting. That was put forward by the railway companies as the criterion invariably. It was resisted by the payers of rates, and in many cases it was not given, and on several occasions re-application was made to the Duke of Richmond's Committee to have the matter re-considered, and in many cases they were much below what the companies had been charging before. But what did they do, my Lord? And this bears very much, I think, on the water supply, and the question of the pledges given in 1852.

(Sir John Dorington.) Should any regard be paid to the cost of water in particular districts, it is much more expensive to supply in one district than in another.

(Mr. Balfour Browne.) I do not think there should be any regard to that—not in a big town. It is not so in any other case. Of course, if you take, for instance, Thirlmere water going to Manchester, if I live in the north of Manchester, I may save the Manchester Corporation five miles of pipe, and a man who lives on the south has his water conveyed five miles more. The capital charge of the pipe is against him; but no difference is made under those circumstances, and I think that one great town should be supplied at one rate; and the equalisation of rates in other matters is now a thing that is accomplished. Why should not it be with regard to water?

(Sir John Dorington.) I only wanted to hear your argument.

(Mr. Balfour Browne.) That is what I say. I do not know whether it is sound, but that is how I put it. May I say just one word more about the railway rates before I leave it, because I think it is important. When before the Joint Select Committee, and before Lord Balfour of Burleigh and Sir Courtenay Boyle, the managers one and all said, it is quoted in a Blue Book, and it is accessible to you, that they did not want the maximum rates, to charge them, but merely in case of emergency. In the beginning of 1893, after the Provisional Orders had been passed with maximum rates, the companies went and raised their rates to the maximum. They were perfectly within their legal rights, as the water companies say here. What did Parliament do? It had a Committee appointed at once, inquired into it and it passed a Bill, the Regulation of Railways Act, 1894, saying that the rates that they were charging before the raising were to be the rates, and that there was to be no increase upon them unless the Railway Commissioners found that it was just and reasonable. Taking away legal rights. And why? Merely because the managers had said when before a tribunal before the passing of the Act, that they did not mean to exercise the power.

(Chairman.) Nobody disputes, I think, Mr. Balfour Browne, that Parliament, of course, can do that if it likes—that is to say, cut down legal rights, but what you are suggesting is that some controlling official should do it, as I understand.

(Mr. Balfour Browne.) No, I am proposing that you should recommend this to be done, and that Parliament should do it if the companies are to continue.

(Chairman.) Very good. Then I also understand you to suggest that the arbitrator, when he comes to consider the value of the companies, should have the power of supposing that to be done which Parliament ought to do.

(Mr. Balfour Browne.) If you do not mind, I will deal with that when I come to purchase, which I will deal with very carefully.

(Chairman.) Very well.

(Mr. Balfour Browne.) These rates of the water companies have been reduced before, and, as I say, they are not sacred. First of all, you will find it is as clearly stated as possible by my friend, Mr. Pope, under question 396. You said, "Wait a minute. That I will try to get in detail in a moment, because it is important. Is that admitted that Parliament reduced rates that had been constituted by a previous Act?" (Mr. Pope.) With regard to some of the companies, yes. And with regard to all the companies, they contemplate a reduction of charge made to the consumer in 1852."

(Mr. Pope.) Where am I supposed to be saying this?

(Mr. Balfour Browne.) In this case.

(Mr. Pope.) What case?

(*Mr. Balfour Browne.*) Before this very Commission. I am quoting from the evidence. I do not wonder that you forget it. It is a long time ago.

(*Mr. Pope.*) Things have changed since then—a great many things.

(*Mr. Balfour Browne.*) And there was a table put in at the end of that day's proceedings, my Lord, showing the reductions that took place. I am not upon the amount of deductions, of course, but upon the principle. Now, I say that an equalisation of rates may take place—ought to take place by Act of Parliament—and that if it takes place it would be to the serious detriment of these water companies. In answer to what Sir John Dorington was good enough to put to me just now, I am reminded that the main drainage rate is the same all over London, although, of course, the cost of the sewers to some districts of the main drainage must be very much larger than to others. Take, for instance, the district that has all its sewerage pumped down at Battersea; that district, in a sense, is putting the ratepayers to more expense than a district where it is merely done by gravitation, and yet the main drainage rate is identical for every part of London; and the idea, I think, of the very word "community" (and it is still one community and is not yet broken up by the Government Bill; it is still one community of London), and that word involves that they all ought to bear the same burden. I have instances here of the exact differences that were made in the rates, but I do not want to go into that. I have shown that the principle has been recognised and it can be done again, but it would be done, I say, to the very serious detriment of these water companies.

(*Major-General Scott.*) An equitable rate might be a mean rate.

(*Mr. Balfour Browne.*) It is possible.

(*Major-General Scott.*) If it was a mean rate it would advantage certain companies to an equal extent—to the extent to which it damaged another.

(*Mr. Balfour Browne.*) I am perfectly certain it would not, and will tell you why. Take for instance a mean rate between Lambeth and West Middlesex. If you increase the rates in West Middlesex you do no good to the company, because they have only to take the rates out of my pocket and hand it back in the rebate. No good at all to the company, they only take it out of my pocket and hand it back as the rebate. Now, I think it would probably come—I am going to say, my Lord, that it will come in our hands, too, and I will deal with that—I think it will come to an equal rate throughout the whole of London, for water in every district. But I am dealing now with the question of whether Parliament should control these companies in the interests of consumers of water, and I say, yes, and if you do you will ruin them and that is why they deprecate control very seriously.

(*Mr. Pope.*) That sort of control which we have not heard of before.

(*Mr. Balfour Browne.*) They deprecate all control except allowing the water examiner to have the right to come into the works.

(*Mr. Pope.*) Unfortunately you see you have not heard all that I have said.

(*Mr. Balfour Browne.*) I beg your pardon, I heard all you said this morning, but I did not think you were going to interrupt this afternoon. Of course this equalisation of rates could, I think I shall be able to show you, be done as a consequence of purchase, and would do no harm to anybody then, because practically (and here I am getting out of my notes because I will deal with it afterwards) the ratepayers and the consumers are the same people. Equalise the consumers rates and even lose on the water 250,000*l.*, you get it from the ratepayers, and if they are the same it is as broad as it is long and it does not much matter.

(*Chairman.*) It is not the same ratepayers as those.

(*Mr. Balfour Browne.*) It is very nearly, my Lord. The only exception is that with regard to the Government, they, of course, are not large consumers of water—railways and gas companies, those are the only exceptions as far as I know. In every other case consumers and ratepayers are the same, and get to be very much more the same every year, because people that did not want water before take it.

(*Chairman.*) What I mean is that the West Middlesex consumer, for instance, would get nothing by your reductions of the water charge down to his level.

(*Mr. Balfour Browne.*) Certainly.

(*Chairman.*) And he would have to pay the rate to make up for the loss in Lambeth, New River, and the rest.

(*Mr. Balfour Browne.*) He would, as every other ratepayer in London would have to do, no doubt, and what would be the result? The West Middlesex consumer, the wealthy consumer in the West End, has been getting the benefit of the lowest rates all these years, and there would be no great harm in putting a little rate on him now.

(*Chairman.*) Your poor householder with a 20*l.* house, which I think is the case in one-fifth of the Kent district, will have just the same thing. He will get little or no reduction of his water rate, but will have to pay the municipal rate to make good the loss?

(*Mr. Balfour Browne.*) To some extent, after all, in a question of rates equality is as near equity as you can get it. I think another effective control might be asked for, that in future—

(*Mr. H. W. Cripps.*) Have you done with the question of equalisation of rates at the present time, or do you propose to return to it?

(*Mr. Balfour Browne.*) No, I propose not to return to it unless I am asked to.

(*Mr. H. W. Cripps.*) It is a large question.

(*Mr. Balfour Browne.*) It is a very large question. I return to it, I think, in this way. Afterwards I will deal with it as an incident of purchase which I think it would come as, but on the question so far as control itself is concerned, I have dealt with it. I think it would be a very great loss to these companies, a loss which would ruin some of them.

(*Mr. H. W. Cripps.*) As a question of control you merely deal with it as an incident of purchase generally.

(*Mr. Balfour Browne.*) Yes. I say again it might be quite reasonable to say, "In future you shall not have the benefit of the quinquennial increase. It is fortuitous in your case, it has put on enormous rates in some cases that did not exist before." That would be another way of cutting down rates which rise without any action of the water companies at all. It is their unearned increment. Take an illustration. In the Chelsea district it was revalued, of course, each five years. Since 1852 it has increased the revenue of that company by 15,000*l.*, or 2 per cent. of its dividend, all from this fortuitous quinquennial valuation. It does not matter whether it is quinquennial or not, my learned friend, Mr. Littler, talked about it not being quinquennial in the counties, but that does not matter. I see the Royal Commission has reported in favour of quinquennial valuations all over, but here by this increase, by what has been called unearned increment, they are getting this great benefit. I can quite conceive Parliament saying, "You shall not have it in future," and, cutting it off, give it to the consumers of water.

(*Chairman.*) I have more than once tried to work that out in my own mind. I wish you would help me. You would say, then, "You shall go on receiving your water-rate at the amount fixed at the last valuation."

(*Mr. Balfour Browne.*) Yes.

(*Chairman.*) Now, ten years hence, for all other purposes the valuation of that house will go up.

(*Mr. Balfour Browne.*) Yes.

(*Chairman.*) The poor and police rates and all the rest of it.

(*Mr. Balfour Browne.*) Yes.

(*Chairman.*) Now, houses built in the immediate neighbourhood, alongside and opposite that house, would also be started at the higher valuations?

(*Mr. Balfour Browne.*) They would get the benefit of those, my Lord.

(*Chairman.*) Exactly.

(*Mr. Balfour Browne.*) I am afraid I could not deprive them of it. I do not see how, but on the others I can.

(*Chairman.*) Yes, but would not you then be introducing a state of anomaly that would be more intolerable than anything that exists now?

(*Mr. Balfour Browne.*) I agree, my Lord, and my answer to it is "Purchase." I am trying to show all the anomalies if I can, and I come back in the end to say there are so many anomalies, there are so many

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Mr. Balfour Browne. burdens to be placed upon them that there is no answer to it at all but purchase. That is the answer I want you to give.

(Sir John Dorington.) And, at present, when revaluations go down, the consumer gets the benefit of the reduction.

(Mr. Balfour Browne.) Certainly.

(Sir John Dorington.) But on the new plan he would not. That is to say, if the rate was fixed so that it should not go up when the valuation rose, of course it would not go down when the valuation fell.

(Mr. Balfour Browne.) That would be hard on the consumer.

(Chairman.) I suppose your control, which is of a very perfect kind, would make it worth —

(Mr. Balfour Browne.) I want, if I can, only to suggest what is logical. I do not think that could be done. I think it would be very unfair to do it in both ways; but I can quite conceive it. I find that the gas companies were deprived of their back dividends for the very small privilege of districting. I find Parliament continually interfering in the interests of the consumers, and I can quite conceive that this anomaly of the quinquennial re-valuation, which does increase enormously the value of these undertakings from time to time—if I am right in that Chelsea illustration 2 per cent. of their dividend is due to it. I can quite conceive it might be taken from them.

(Sir John Dorington.) Under purchase it would be exactly the same.

(Mr. Balfour Browne.) Under purchase it would not matter, because, of course, if the rateable value went up we would get so much water rate, and we would probably have to reduce the price of water. I am afraid that a good many of my friends do not seem to know—my learned friend, Mr. Pember, certainly did not know—in comparing a table of Mr. Gomme's he spoke about the losses made by certain of the Corporations—that under an Act of Parliament a large number of the Corporations are not allowed to make a profit—that whenever they have a profit they must next year fix the rates so as to get rid of that profit, and we would be probably in the same position that every penny that we turned over more than what was necessary to maintain the works, pay interest and sinking fund, would have to go in the reduction of the price of the water. Just take one illustration, which is also in Mr. Gomme's evidence. In 1851 there was a house, 286l. 10s., which now pays on a rateable value of 725l. Of course, on that house, without one stroke upon the part of the water companies, without their supplying any more water—because, presumably, the house is the same—they must be getting nearly three times the water rate. Of course, if they were supplying more water one could quite understand their asking a higher rate, but the anomaly comes, my Lord, not from my suggestion, but the anomaly comes from giving the water company taxing powers, and it taxes upon a rateable value—which is a very good basis for Imperial taxation or local rates, but is not a good basis for water supply. It is a very difficult thing to say what is a good basis. That would be got over, of course, entirely if it were in the public hands.

Now, my Lord, the next matter that I should suggest in the way of control is a re-adjustment of the capital accounts of the companies. I think your Lordship misunderstood us when we were giving evidence as to obsolete capital. I have never said that on sale from them to us the question of obsolete capital would come in. I have said all along that it is quite possible now by an Act of Parliament to so adjust the capital accounts as to reduce the revenues of those companies.

(Mr. Pope.) Not the revenues.

(Mr. Balfour Browne.) I have been consistent all along; but because I think you Lordship at one time said you did not understand that, I will just read three or four questions that I put in re-examination of Mr. Gomme. It begins with Question 4612. "On the other hand, supposing it is made upon revenue being actually earned, must not you find out whether that revenue can be maintained, or not?"—*(A.)* I should say so, certainly. *(Q.)* And it is only maintainable revenue that would be made the basis of a purchase under those circumstances?—*(A.)* Certainly. *(Q.)* If the revenue could be maintained without the obsolete works, any purchase of obsolete works upon that basis might be left out of consideration altogether?

"—*(A.)* I think so. *(Q.)* But if, as you say, these companies are to be controlled, you think, in the interests of the consumers of water, their capital might be written down, their revenue therefore reduced, and the time come much sooner when the consumers might get the reduced price of water?"—*(A.)* I think so. My Lord, you will see there I did not put it on purchase. I said it had nothing to do with purchase, but merely with control. A little later on I put this to Mr. Gomme: "Just suppose that a company has a capital of 1,000,000l., suppose you write off as obsolete 500,000l., reducing its capital to one-half, and supposing it has been distributing a maximum dividend of 10 per cent. on the 1,000,000l., now it can only distribute 10 per cent. upon the 500,000l."—*(A.)* It would, first of all, pay its back dividends. *(Q.)* But whenever that were done, then all the revenue would go to the reduction of the price of water?—*(A.)* Yes. *(Q.)* Then, as I understand your argument, for whatever it is worth, was not upon the question of purchase, but upon the question of control, and Mr. Gomme said "Yes." I only wanted to show that I have been consistent all through. I have never said that obsolete capital should be written off in the case of purchase, because as purchase would take place on revenue, the mere fact that they had something that did not earn any revenue at all would not affect that revenue.

(Mr. H. W. Cripps.) Are you clear, Mr. Balfour Browne, that no other witness put that case about the obsolete capital?

(Mr. Balfour Browne.) I do not think so.

(Mr. H. W. Cripps.) Mr. Pember treated it as if someone had said it.

(Mr. Balfour Browne.) I think if I must blame anybody it must be Lord Llandaff, who suggested it to me, that I had put obsolete capital as to be considered by the arbitrator. The only gentleman who has spoken really much about obsolete capital is Mr. Gomme, and I have read from his evidence. I do not know of any other.

(Mr. H. W. Cripps.) I have been led to suppose that that had been seriously put forward.

(Mr. Balfour Browne.) I did not put it seriously forward at all.

(Sir George Bruce.) Why need we deal with obsolete capital at all?

(Mr. Balfour Browne.) Because I think it is a most material matter in control, and I will show you that it has been done before. It is quite true some of the witnesses say that they did it voluntarily. I have here a very long memorandum which I do not want to read to you, showing that it was done by Parliament; and on the evidence you will find that upon one occasion, in 1852, the West Middlesex shares were written down from 100l. to 61l.—all to the benefit of the consumers.

(Mr. Pope.) No, no; what dividend were they paying then?

(Mr. Balfour Browne.) It does not matter what dividend they were paying.

(Mr. Pope.) If they were not paying 10 per cent., it would not matter twopence to them; but if they were paying 10 per cent., I agree the surplus would go to the consumer.

(Mr. Balfour Browne.) Forgive me, it is quite obvious it is for the benefit of the consumer. If the 100l. had stood, they would have been paying 10 per cent. on 100l., which is 10l. As it was written down to 61l., they can only pay 6l. on that which is a benefit of 4l. on every 100l. to the consumer. That is quite obvious.

(Mr. Pope.) To be written down at the rate per cent.

(Mr. Balfour Browne.) Written down from 100l. to 61l.

(Chairman.) Will you forgive me? There are several pages which have produced this cloud, I daresay, of confusion in my mind. At question 4169, Mr. Gomme is asked this: "You have been speaking about this proposal to renew the process of revision of capital, and as I gathered from some of the answers you gave to the noble Lord, you did not think that that was a matter which was worth consideration, unless purchase is discarded and control without purchase is introduced, but others of your answers rather seemed to show that that was not quite your view. Which

" is it? If you say that it only applies to control without purchase, I should not ask you the two or three questions I want to ask?—(A.) I think that the question of the revision of the relationship of capital to actual works must be a question which the arbitrator will take into consideration; but my evidence was more directed to the question of control."

(Mr. Balfour Browne.) It was upon that you see that I was re-examining, and what I have read is at a later stage.

(Chairman.) Well, well, but this spectra has cropped up two or three times.

(Mr. H. W. Cripps.) My impression was that he did put that originally.

(Chairman.) At question 5333, Mr. Dickinson was asked: I want to ask you a question about what was stated by some of your witnesses as to what would take place before an arbitrator. Do I understand that when the arbitrators have found out what the company was worth, that is a going concern, as you buy it, they are to strike off from that some sum, because there are some obsolete works, or because of something that took place early in the history of the company, which is not available at the present time?—(A.) I think that circumstances ought to be borne in mind by the arbitrator in assessing the capital sum or the number of years' purchase." Nothing can be more distinct than those answers. I could find other passages if I were to hunt for them.

(Mr. Balfour Browne.) My Lord, to some extent that is right. Take that illustration I have just given. West Middlesex shares in 1852 written down from 100l. to 61l. That you will find at Question 26,043. That obsolete capital that was written off then would bear on purchase because they would only get an income equivalent to 10 per cent. upon 61l., while if the 100l. had not been written off they would have got a compensation for the interest upon the 100l. To that extent it might bear on purchase. But just now, when we are asking you to give us purchase, I propose to ask in the ordinary way to buy upon revenue, and that was why I put this question to Mr. Gomme. Now revenue must be earned by works that are not obsolete. The mere fact that the company has something that is obsolete besides does not take away from the revenue. I am going to get something that is obsolete as well as the revenue handed over to me. Therefore, I do not think it bears on this.

(Chairman.) I understood from those answers that the process that the arbitrator was to go through was this: capital receiving dividend at this moment 1,000,000l., 500,000l. of that obsolete; those 500,000l. ought not to receive dividends, the dividends they have been receiving in the past ought to be attributed to the 500,000l. that is alive, and that is not obsolete. Consequently you have had your 10 per cent., or ought to have had it long ago, and you have discharged your back dividends long ago, and now comes the time when you can claim nothing more for prospective income.

(Mr. Balfour Browne.) I did not understand it that way at all, and did not put it before you in that way.

(Chairman.) Then I cease to understand anything. If it did not mean that, what was it?

(Mr. H. W. Cripps.) If you regard the future entirely, then I suppose it becomes immaterial, but if you are really going to adopt another plan, and put forward how much it has cost you at the beginning then it is material.

(Mr. Balfour Browne.) Yes, but so far as my experience goes I do not think the latter of those suggestions is the one on which ordinary arbitrators proceed.

(Mr. H. W. Cripps.) I do not think so myself.

(Mr. Balfour Browne.) You must look at the income they have got, you must look and see how that income is secured. You must then multiply that by a certain number of years' purchase, the number depending upon the security; and in that calculation, so far as I see, obsolete capital does not come in.

(Mr. H. W. Cripps.) I put forward once the illustration of it in the case of the Great Western Railway. The value of the Great Western Railway is what it could earn now, and what it can earn in the future. But if you went back to the beginning you would find an enormous amount of capital wasted by the engineer who put down the broad gauge, and they had to take it up again. Therefore, if you are going to that to find the value, obsolete capital would be very important.

(Mr. Balfour Browne.) I think so, but I do not think that would be the basis that we should propose to purchase on. That would be rather hard.

(Major-General Scott.) Why should you go into that in the case of control?

(Mr. Balfour Browne.) Because then, I think, it is another method of reducing the rates, and the whole object, of course, of the consumer—and it is in his interests this inquiry has taken place—is to have his water as cheap as possible, and if we could say now this company is here, with a capital of 100,000l.—it has not got a capital of 100,000l.—instead of doing what an ordinary commercial company would have done—laid away a depreciation fund, which would have kept all its works up to the value of 100,000l., it has squandered it; it has allowed it to lapse, and it is only worth 50,000l. to-day—I think Parliament might say, "There is to be a structural valuation of those works; we will fix the capital on that, and they shall only divide dividends on that," that is what was done in 1852?

(Major-General Scott.) Would you get water companies to go into business on those terms?

(Mr. Balfour Browne.) They are in it. This is a control of existing companies.

(Chairman.) Control, in your sense, amounts to a complete turning topsy-turvy of the whole position of the water companies as to rates, as to shares, as to capital, and to almost every point in their existence.

(Mr. Balfour Browne.) And without it there is no control.

(Chairman.) Very well.

[Adjourned till to-morrow at 11 o'clock.]

Mr.
Balfour
Browne.
—
22 Mar.'99.
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SIXTY-FOURTH DAY.

Thursday, March 23rd, 1899.

Guildhall, Westminster, S.W.

PRESENT:

THE RIGHT HONOURABLE VISCOUNT LLANDAFF, CHAIRMAN.

SIR JOHN DORINGTON, Bart., M.P.

SIR GEORGE BARCLAY BRUCE, Knt., C.E.

Major-General ALEXANDER DE COURCY SCOTT, R.E.

HENRY WILLIAM CRIPPS, Esq., Q.C.

ROBERT LEWIS, Esq.

CECIL OWEN, Esq., *Secretary*.

Mr. Balfour Browne, Q.C., and Mr. Freeman, Q.C., appeared as Counsel for the London County Council.

Mr. Pope, Q.C., and Mr. Claude Baggallay, Q.C., appeared as Counsel for the New River and Southwark and Vauxhall Water Companies.

Mr. Littler, Q.C., and Mr. Lewis Coward, appeared as Counsel for the Kent Waterworks Company.

Mr. Pember, Q.C., appeared as Counsel for the Lambeth, East London, Grand Junction, and West Middlesex Waterworks Companies.

Sir John Leese, Q.C., M.P., appeared as Counsel for the Kent County Council.

Mr. Rickards appeared as Counsel for the Chelsea Waterworks Company.

Lord Robert Cecil appeared as Counsel for the Hertfordshire County Council.

Sir Richard Nicholson appeared for the County Council of Middlesex.

Mr. G. Prior Goldney (Remembrancer) appeared for the Corporation of the City of London.

Mr. BALFOUR BROWNE, Q.C., called to further address the Commission.

Mr.
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23 Mar.'99

One observation fell from Sir John Dorington, yesterday, upon which I want to say just one word. I had been speaking of the unearned increment given to the companies in consequence of the quinquennial valuation, and Sir John Dorington, after I used some argument, said, "Under purchase it would be exactly 'the same.'" I said under purchase it would not matter. Just let me make it clear why it does not matter under purchase, and in order to make it perfectly clear I have got a concrete illustration. Supposing the rateable value of London is one million pounds, or take a parish, it does not matter—and that 5s. has to be raised for county purposes or police rate. That would be a rate of 250,000*l.* on the million rateable value.

Now, supposing there is a quinquennial valuation, and the rateable value is doubled, that is to say it becomes two millions, 5s. has still to be raised on the million, but it is only 2s. 6*d.* now on the two millions, because, of course, the rates do not go up. You have to reduce the rate, having always to raise the same amount. Now, just suppose that in that town, with its million rateable value, the water company was getting 40,000*l.* a year. Suppose I double the rateable value, then the water company gets 80,000*l.* That is the difference between the company's getting the benefit of the quinquennial, and the ratepayers getting the benefit of the quinquennial.

Now, my Lord, that practically is all I want to say upon the various subjects of control. Let me sum them up, just mentioning them. First, I say that competition may be made effective as it exists in the case of electric lighting, as it is to exist in the case of telephones. I say you may compel the companies to go to new sources of supply. You may compel them to make further and better provision for filtration, storage, and things that will improve the water supply of London. You may make them lay their pipes deeper in the ground, so as to avoid the consequences of frost. You may make payments depend upon supply. You may compel the companies to prevent waste. You may equalise the rates throughout the whole of London. You may deprive the companies of the benefit of the quinquennial. You may re-adjust their capital in the way I suggested, and you may, lastly, limit the back dividends which the companies are entitled just now to make up.

That has been done in the case of the gas companies of London for their back dividends were limited to six years, and it might be done in the case of

the water companies. I say, my Lord, that these are the controls that would be effective. I deprecate any rose water control such as has been suggested here. It will not do. I do not want to use any strong language about the companies, but I was engaged four years ago on the inquiry that took place as to the famine in East London, and if your Lordship could have heard the evidence that was given there, I think you would have come to the conclusion that it was not a matter for inquiry about finance, but that it was a matter for immediate action. Had it not been for the infinite patience of the poor of that district, something would have been done by Parliament long ago. As I say, I do not want to use harsh language, but the condition of East London at that time in the hot weather when the people were suffering from want of water was a disgrace to the company, and yet, my Lord, what has happened? That was four years ago. A public inquiry was held at the instance of the Government by the Local Government Board. What has happened? Nothing, except another famine. Therefore, my Lord, I say something must be done now. Control such as I have been suggesting would do a great deal, but it will ruin the companies, and I cannot ask that. It would be absurd to suppose that Parliament is going to ruin the companies. Parliament is going to make the companies do their duty, and if they cannot, it will take these undertakings out of their hands and put them into the hands that can do this great and important public duty, and that is why I come to the conclusion that there is nothing for it but purchase.

Now that leads me to the second branch of the inquiry, and with your permission I will consider purchase having regard to financial considerations and present and future requirements. The alternative to control, I say, is to put these works in the hands of the people to be managed for the people, but, I say, do it on fair terms, and I will show you that we propose fair terms.

With regard to purchase, my Lord, it seems rather late in the day really to be inquiring about it. Here is a town, London, the greatest town in the universe. Here is its municipal body, the County Council, asking leave to have the waterworks in its own hands, and we are inquiring whether it should have them on financial considerations. I think it is too late. We were dealing only two days ago in the House of Lords with the Airdrie and Coatbridge Water Company's Bill, and it was stated then, and I believe it was admitted, that

that was the last company existing supplying water in Scotland. In every other case throughout the whole of Scotland the municipality has got possession of the waterworks, and is supplying water. Is that good policy or bad? Are you going to condemn what Parliament has done, by a report now-a-days, saying, No, it should not be in municipal hands. Are you going to say by your report that London is the only place that should not have its water supply? Are you going to say it would be financially bad that London should have it? Why is it financially bad in the case of London if it is financially good in the case of every other place in England? There are only four great companies existing so far as I know to-day in England.

(*Mr. H. W. Cripps.*) May I ask you a question on that point?

(*Mr. Balfour Browne.*) Yes, and I hope I may be able to answer it.

(*Mr. H. W. Cripps.*) Where do you get the fact from, supposing it is a fact, that in Scotland every single supply of water now is in the hands of a municipality.

(*Mr. Balfour Browne.*) I will tell you where. It was only two days ago we had a Bill for the Airdrie and Coatbridge Company in the House of Lords, and it was stated on both sides and admitted on both sides that that was the last company existing in Scotland.

(*Mr. H. W. Cripps.*) We have not had it as a matter of evidence before us.

(*Mr. Balfour Browne.*) No, that is so. I am stating it on my own authority, because it is a recent instance.

It was stated, and I will tell you how it arose, because in the course of the inquiry the Corporations of Airdrie and Coatbridge asked to have a purchase clause inserted in the Bill, and they said this is the only existing company in Scotland.

(*Mr. H. W. Cripps.*) I daresay it would be correct, but it may not be correct.

(*Mr. Balfour Browne.*) It may not. Then you may take it subject to that. All I can say is that it was not denied, and it was stated before Lord Cairns' Committee in the House of Lords two days ago. But we know about England. Take the great towns, Liverpool, Manchester, Birmingham, Leeds, Sheffield, Leicester—almost all the great towns are the owners of their water works. Has Parliament been foolish—has Parliament been wrong in passing over the works into their hands? I say No. The only three great towns that I know of that have not got the water works are Newcastle and Gateshead, where there is a company supplying, Bristol where there is a company supplying, and Portsmouth. Those are the three great towns that are still supplied with water by companies, and if it was wise in the case of those great towns I have mentioned, why is it not wise in the case of London? But again, I say I think it is too late, because it has over and over again been declared in the case of London that it is the right thing as I shall show you. I only want to refer for an instant to a public statute which clothes all local authorities, not only with the right, but with the duty, to supply water. Section 51 of the Public Health Act, 1875, says that every local authority may supply water to its district and for that purpose may construct works, may hire works, or may buy water. That is the policy of Parliament, that local authorities should have the power of supplying water. Section 52 says where there is a company authorised by Parliament to supply, and while it is able and willing to supply water properly and in sufficient quantity, the local authority shall not compete, and whenever a company fails to supply water proper and sufficient, if that is declared and found by an arbitrator, the local authority is entitled to compete. My Lord, again on one of my learned friend's Mr. Littler's arguments, it has been decided that every local authority may supply itself with water for its own public purposes, that is to say, for fountains, watering streets, and public baths, whether there is a company there or not. That has been decided. Therefore, to that extent competition is recognised, and to that extent the public duty to supply water for public purposes is recognised. But I say it has been recognised not only with regard to England generally in the Public Acts—not only in a hundred Private Acts, but it has been recognised by Parliament with regard to London. The Public Health Act 1875 of course, as your Lordship knows, does not apply to London. London is expressly excluded, but it applies to all other parts of England, and I want to show that

the same principles should apply to London by referring to certain Reports. My Lord, you know it has been referred to here that in 1852 Government brought in a Bill which gave power first to the companies to amalgamate, and then gave power to purchase that amalgamated concern upon special terms, the word being "just"—just terms. Apparently, then, so long ago as 1852 there was some idea the water supply of London should be in the hands of the public, but again the Government of 1880 said to Mr. Smith, "Go and make terms with the companies and we will buy them." Is that contrary to public policy?

(*Mr. H. W. Cripps.*) Not the Government, but Lord Cross.

(*Mr. Balfour Browne.*) He was the Home Secretary at that time, but the Government did it. Of course it was a Government measure.

(*Mr. H. W. Cripps.*) I do not know that.

(*Mr. Balfour Browne.*) Yes, I think so.

(*Mr. H. W. Cripps.*) Lord Cross was the active party.

(*Mr. Balfour Browne.*) Yes, of course he was, and it was always called Lord Cross's Bill but it was the Government that did it, and a Bill was introduced to carry out the agreement that had been provisionally made between the companies and Mr. Smith. It was a Government Bill introduced by them. But surely under those circumstances it cannot be contrary to public policy that the works should be in the hands of the public. Is it? My learned friend Mr. Pember the other day said I have no doubt a very well merited compliment to Sir William Harcourt, which will please him in his retirement in Rome, but it was not Sir William Harcourt that did this; it was a very strong Committee that reported, let me tell you who were upon Sir William Harcourt's Committee; this was the Committee (after the Government had fallen) to which was referred the question, were the agreements made by the last Government so provident that they should be carried out. I see this is the Government Bill of 1880. It was backed by Mr. Secretary Cross and Mr. Selater Booth. The Committee consisted of Sir William Harcourt, Sir James, McGarel-Hogg, Mr. Chamberlain, Sir Richard Cross, Mr. Alderman Lawrence, Mr. Brand, Mr. Firth, Sir Gabriel Goldney (the father of the present Remembrancer), Lord George Hamilton, Mr. Thorold Rogers, Mr. Selater Booth, Mr. John Holms, Mr. Pemberton, Mr. Caine, Mr. Maurice Brooks, Mr. Hubbard and Baron Henry de Worms, an exceeding strong committee. And what did they report? What first was the reference? The reference to the Committee was, "to inquire and report as to the expediency of acquiring on behalf of the inhabitants of London the undertakings of the existing Metropolitan water companies, and also to examine and report whether certain agreements, or any of them, already entered into provisionally for the purchase of these companies would form a satisfactory basis for such an acquisition, and, further to inquire and report as to the nature and extent of the powers of the water companies to levy water rates and rents, and how far it may be desirable to modify the same"—a very large reference—so far as I see, even larger than the reference to this Commission. Now what is the report? "That it is expedient that the supply of water to the Metropolitan should be placed under the control of some public body, which shall represent the interests and command the confidence of the water consumers"—a public body. "That under such management a greater efficiency, economy, and equality of charge"—pointing exactly to what we are pointing now, equality of charge—"than that which at present exists might be secured, the defects in the present provision for the extinction of fire might be remedied, and better provision might be made for the health of the community. That in order to effect the above-mentioned objects, a water authority for the Metropolitan should be created"—at this time there was no county council, as you know—"with statutory powers, which will enable such body to acquire and utilise, so far as may be deemed expedient, existing sources of supply, and to have recourse to such other sources of supply as, upon investigation, may prove to be available and desirable." Then this is important: "That in the absence of any single municipal body to which these functions could be committed, a water authority of a representative character should be constituted, and that a Bill having that object be introduced at an early date by Her Majesty's Government." Then it goes on lower down, "That

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"for certain purposes, at least, it would be desirable to acquire the undertakings of the existing companies, if the same could be obtained upon fair and reasonable terms." Then towards the end of this Report it says: "But your Committee would observe that the total cost of the existing water supply to the Metropolis has not much exceeded 12 millions, a considerable portion of which sum may be attributed to works which have become useless or have been duplicated. And it would become the duty of the water authority when constituted carefully to consider with the professional assistance which will be at their disposal, whether a new and better supply could not be obtained at a cost greatly less than the sum which would have had to be paid, under the agreements for the existing supply. In the constitution of the water authority your Committee would recommend that that body should be entrusted with the largest discretion as to the best method of dealing with the water supply of the Metropolis. Various courses might be adopted. It would be possible to proceed by regulation of the powers of the existing companies, as in the case of the gas supply; or by the introduction of an independent water supply, or by the purchase of the existing undertakings." Three things are pointed at there; first, regulation or control such as I have been suggesting; second, competition by a new supply; or, third, by the purchase of the existing undertakings. "It would be the duty of the water authority maturely to examine which of these schemes, separately or in combination, would be most advantageous to the public. In order to give effect to any of them, further statutory authority would be necessary, so that the judgment of Parliament on any scheme adopted by the water authority would be finally reserved."

My Lord, that is an authority for saying that a Committee of Parliament, so long ago as 1881, said that these works should be in public hands. That is an authority also for saying that you may proceed either by purchase, by regulation, or by competition. The introduction of a second source of supply was specially referred to, but I think, with great respect to the Committee, and that was a very powerful Committee, that that would be improper. I think that would be confiscating the property, injuring the property of the water companies, and I do not propose it, and the London County Council do not propose it. Our remedy for the whole is what this Committee recommended as one of the possible courses, purchase, and, as I shall show you, purchase on fair terms.

The next matter, my Lord, that I want to refer to is the report of Sir Matthew White Ridley's Committee. That was a Committee to which two Bills were referred, the London Water Commission Bill promoted by the Corporation for the very purpose of making a Commission to buy the works of the water companies, and another, a Bill promoted by the vestries for the very same purpose. Here you have every authority in London of the same mind, that these works should be purchased—the Corporation, the County Council, and the vestries. What did Sir Matthew White Ridley's Committee report? "Your Committee have proceeded upon the assumption that, in the opinion of Parliament, it is desirable to establish a single public representative water authority for the Metropolis." So long ago as that, there they proceeded upon the assumption that Parliament has made up its mind, and yet here we are at this time of day inquiring, not as to the expediency generally, but as to the financial questions. I think it is too late to inquire about finance, that is what I think. Now, here is what the next paragraph in the Report says—of course, I am before this tribunal, and I want to treat you with great respect—it did not make itself, it was made by the Government; but I blame the Government for inquiring into finance at this late period of the day. It ought to have thought of that before. I will show, as I hope to be able to show you, that financially there would be a great benefit; but that is a small question, as I pointed out yesterday, in comparison with the large questions dealt with by these Committees. This is the report of Sir Matthew White Ridley's Committee continued, "The Royal Commission presided over by the Duke of Richmond in 1869 reported 'that the future control of the water supply should be entrusted to a responsible public body with powers conferred on them for purchase and extension of existing works, and for levying certain rates referred to.' They start with that supposition that everybody is of one mind, and they quote from the old

Report of the Duke of Richmond's Commission in 1869. Then they go on, "And the Select Committee, of which Sir W. V. Harcourt was Chairman, and which examined into the provisional agreements for purchase contained in the Government Bill of 1880 reported that it is expedient"—then they quote what I have already read to your Lordship—"Since these reports"—this goes on—"much valuable experience has been gained of the growth of population, and of the undertakings of the water companies, and the demands upon them. Parliament also, since 1886, has adopted the policy of enforcing more stringent provisions in case of the issue of any fresh capital. An important inquiry into the whole matter, too, has recently been held by the Corporation of the City of London, and it is evident that there is much fresh light for the consideration of the question from every point of view. Your Committee therefore consider it to be most desirable that the problem should be carefully and deliberately examined by the newly-constituted municipal authority, the London County Council, in the interests of the water consumers of the Metropolis. . . . Your Committee recommend:—(i.) that powers should be granted to the London County Council to expend such further sums as may be reasonably necessary in order that they may examine thoroughly for themselves as the responsible municipal authority of London the whole position of the metropolitan water supply, and come to a conclusion as to the policy which, for financial and other reasons, it is desirable to adopt. (ii.) That if they should so resolve they should have power to promote a Bill or Bills in Parliament for the purpose of constituting themselves the responsible water authority." This is the recommendation of a Committee of the House of Commons that we should have the power to promote Bills in Parliament for this very purpose, and on that report Parliament passed an Act clothing the London County Council first with powers to spend money for these inquiries, and second to promote Bills in Parliament for the very purpose that Sir Matthew White Ridley reported on, and here we are inquiring still. It was reported that they should have power to "constitute themselves a responsible water authority for London acting through a statutory committee appointed either wholly by themselves, or partly in conjunction with the Corporation of the City of London, as suggested to your Committee on behalf of both bodies, such statutory committee to comprise a certain number of members possessing special knowledge and qualifications, not necessarily members of the body or bodies appointing. (iii.) That the London County Council, if constituted the water authority, should be required to purchase, either alone or in conjunction with such of the authorities of the outside areas as may be arranged, the undertakings of the eight water companies (except possibly certain lands of the New River Company) by agreement, or, failing agreement, by arbitration within a fixed period." Therefore I tell you, my Lord, I think that with all these things before you, you would hesitate to say, unless upon very strong ground indeed, that purchase is not the right course, and that the London County Council are not the right body to purchase.

(Major-General Scott.) Did not that committee at the end suggest an inquiry as to control?

(Mr. Balfour Browne.) No, I think not.

(Major-General Scott.) Did not Sir Matthew White Ridley's Committee?

(Mr. Balfour Browne.) No. Sir William Harcourt's Committee had suggested that the constituted authority might either proceed by regulation or by competition or by purchase, but I do not think there is anything about control.

(Major-General Scott.) I was very strongly under the impression that Sir Matthew White Ridley's Committee suggested an inquiry into the matter of control at the end of their Report.

(Mr. Balfour Browne.) I think not, but I will read it. This is what Mr. H. L. Cripps directs my attention to:—"In the event of the undertakings of the companies not being acquired by purchase, the Committee recommend that there should be a Parliamentary Inquiry before which the interests of the whole of the consumers within the area of the present metropolitan water supply ought to be

"represented, into the statutory powers and obligations of the water companies, and the control which is now exercised by public departments"—I beg your pardon, I did not remember that—"and the metropolitan and other authorities over them." In the appendix to the minutes of evidence will be found a memorandum setting out the existing "conditions." That, as you see, is a second string to the bow. It is in the event of there not being purchase, but purchase is the first word in that, and you will remember first of all they said that we should be clothed with the power of purchase and required to purchase the companies. But supposing that the London County Council had said, no, we will not purchase, then, as I understand it, there was to be this inquiry into the powers of the companies, and, possibly, eventuating in control.

(*Mr. H. W. Cripps.*) I do not quite understand how that is consistent with the word "required."

(*Mr. Balfour Browne.*) Neither do I. I think the requirement probably had reference to the fact that we were not to purchase one company alone, although it does say this—and I will read it again.

(*Mr. H. W. Cripps.*) It is "required to purchase."

(*Mr. Balfour Browne.*) I think that was so. The two Bills that that Committee were considering were optional Bills, giving the power to purchase or not to purchase, and I think what Sir Matthew White Ridley's Committee said was that it should be required instead of making it optional, and I do not think it is quite consistent with that, to say afterwards that if purchase does not take place, there should be control.

Now, my Lord, I pass from that, having read all that I think is important in Sir Matthew White Ridley's Committee's Report.

Then I come to the Committee that sat upon our two purchase Bills, the County Council's purchase Bills, and you will remember that the chairman in the middle of my speech—I forget when it was, but it was in the middle of my speech in opening the Bill—said, "we cannot sit much longer to-day; I think it would be very convenient if you were to open this new part of your case when we re-assemble to-morrow," and then he says, "I may say, for your convenience, that the Committee are of opinion that they would follow the first paragraph of Sir Matthew White Ridley's Report, and will proceed upon the assumption that in the opinion of Parliament it is desirable to establish a single public representative water authority for the Metropolis, so that when you proceed with your speech to-morrow you may proceed on that basis." Of course, although I am reading from a copy, every word of this is on the evidence before you, and put in very early in the proceedings.

(*Mr. H. W. Cripps.*) It is not in the blue book.

(*Mr. Balfour Browne.*) It is not in the Blue Book, but it is in the evidence before you here.

(*Mr. H. W. Cripps.*) There are two books. What you are about to read now is in the ordinary reports of the evidence.

(*Mr. Balfour Browne.*) I think so.

(*Sir George Bruce.*) The other was quoted in the book.

(*Mr. Balfour Browne.*) That is so.

(*Sir John Dorington.*) It has been embodied in Mr. H. L. Cripps's evidence, I think.

(*Mr. Balfour Browne.*) Yes, it is in Mr. Cripps's evidence. Then, I said, the next morning, "What you said, sir, at the end of the day—and I will read your very words if you will allow me—does, to a very large extent, assist me. You said the Committee are of opinion that they would follow," then I read that, "Now, sir, I take it that that means—of course, I cannot enter more into your mind than your words will justify me—that if there is to be a public representative water authority for the Metropolis, that that water authority is to have the undertakings of the water companies. I am not going to press your words a bit beyond that in the meantime, but if you establish a water authority, I take it your idea is that that water authority should administer the water undertakings. As to who that water authority should be, I hope to be able to convince the Committee that it should be the London County Council." The Committee, as you see, accept that view that the water companies are to be purchased. The only ques-

tion that I had to establish was that the water companies should be purchased by the London County Council. The Chairman said, "I only intended to convey that we adopt, exactly for what they are worth, the words of the first paragraph of Sir Matthew White Ridley's Committee's Report, and I would rather not have any further construction put upon it at the present time." Then, my Lord, the only other thing that I want to refer to as showing that the whole course of Parliamentary inquiry has pointed in this one direction is the Report of Sir Joseph Pease's Committee upon the Chelsea Water Bill, the Lambeth Water Bill, the Staines Reservoir Bill, the New River Company's Bill, and the Southwark and Vauxhall Bill. It says, "Your Committee would with great deference point out that the present position of the London water supply is not in accordance with the public interest. Under the conditions of issuing new capital, now invariably approved by Parliament for the London water companies, the public is steadily acquiring an interest which tends to weaken the enterprise of the companies as private concerns, whilst, on the other hand, the consumer is left without that care of his interests which is ensured by placing the supply under a representative body in whose election he is personally interested." My Lord, that Committee pointed to, first, the fact that all the water stock of London now has to be sold by auction. Then, further, they pointed to the fact that the consumers are acquiring a large interest in this concern. It is in Mr. Haward's evidence that in 1915 the sinking fund will amount in that year to 120,000*l.* per annum. With accumulations the amount that will have been accumulated in that year will be 1,780,660*l.*, all property of the consumers of water in these undertakings, and in 1930 it would amount to five millions of money. We, the consumers, are purchasing these concerns just now, and yet we are inquiring into the policy of purchase. We are getting a large interest, as Sir Joseph Pease's Committee pointed out, and we are weakening the enterprise of those companies, they are becoming more and more bare trustees managing the affairs for us instead of letting us manage them ourselves. I ask you to take the property out of their hands. I say that London has come of age, it has got a county council, it has got hands to manage its own concern with. We can do without the companies. Then the Report of Sir Joseph Pease's Committee went on:—"In the meantime each session applications to Parliament, sometimes inconsistent and usually without concert with one another, are being made, which are opposed by local authorities and private persons. These proceedings are annually costing a very large sum of money, and committees of Parliament, being obliged to consider each proposal separately, without reference to any general scheme, have the almost impossible task assigned to them of deciding what powers should be granted to the water companies in order that they may provide for the wants of an over-increasing population and what powers withheld to avoid the water companies acquiring an increased value in the event of purchase by a public authority." Now, my Lord, since these days of Sir William Harcourt's Committee the companies have never been allowed to raise capital which is to increase the value of their undertakings. Take the Staines scheme. It is expressly provided that if we purchase within seven years—which again points to purchase—the money expended by them is not to enhance the value of their undertakings. The value of their undertakings is stereotyped at the date of that Act before it passed. That is a hard thing for the companies.

(*Major-General Scott.*) I should like to hear what the provision for that is in the Act.

(*Mr. Balfour Browne.*) I will read it from the Staines Act. But, first, I ought to have read this last paragraph of Sir Joseph Pease's Report:—"From this acknowledged anomalous position it would be greatly to the public interest that both the water companies and the inhabitants of London should be speedily freed." This is the section I was referring to in the Staines Reservoir Act of 1896:—"If the undertaking of any of the three companies be purchased within seven years from the passing of this Act, otherwise than by agreement, by any public body or trustees, nothing in this Act contained shall extend or be deemed or construed to extend to authorise the company to bring into account or to make any claim in respect of any advantages

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"conferred on them by or resulting from the passing of this Act."

(Chairman.) What section is that?

(Mr. Balfour Browne.) Section 84 of the Staines Reservoir Act of 1896.

(Mr. H. W. Cripps.) I thought that same provision was repeated in some other Act of Parliament.

(Mr. Balfour Browne.) It is also in the last year's Act of the Southwark and Vauxhall Company.

(Mr. H. W. Cripps.) In the same words?

(Mr. Balfour Browne.) Very nearly—"subject as in this section provided"—this is in the Southwark and Vauxhall Act. "If the undertaking of the Company be purchased within 10 years from the passing of this Act, otherwise than by agreement, by any public body or trustees, no additional value shall be deemed to be given to such undertaking by the powers conferred by this Act. Provided that nothing in this section shall, in the event of their undertaking being so purchased, be deemed to preclude the Company from bringing into account or making any claim in respect of any actual capital expenditure made by them in exercise of the powers conferred by this Act." My Lord, these clauses have been put in with a view to purchase first of all, but they are very serious clauses for the companies. Under these Acts they must spend large amounts of money, but when we go before an arbitrator to assess the value of these works of this company it will be said, and said rightly, you were, before you got that Act, in want of water, you went to Parliament and said, we cannot supply our consumers without getting more water, therefore you were a defaulting company at that time, and it is as a defaulting company that you are to be bought. Both of them will be bought as defaulting companies, because these new Acts are not to be brought into consideration. They will get the capital cost of these works, but there will be no enhancement by reason of the fact that they have got a new supply of water. Now, I say, that puts these companies in a very serious position, it is again making them trustees for the public. But we do not want trading trustees. It is against the policy of Parliament to have trustees of that nature. The only trustees we want are the people who represent us, that we elect ourselves.

(Sir John Dorington.) The operation of that clause and the operation of the sinking fund clause as regards the interest of the companies are identical, are they not?

(Mr. Balfour Browne.) No, with deference.

(Sir John Dorington.) I mean to say as affecting their purchasable value.

(Mr. Balfour Browne.) I think they are entirely different. By the sinking fund clause, as a fact, it is paid out of the consumers' pocket—it is only accumulated by the company out of our pocket, it is charged in the rates, and it is laid away for us.

(Sir John Dorington.) Yes.

(Mr. Balfour Browne.) That is the sinking fund. Now I will take the Southwark and Vauxhall: you, at the time you brought your Bill into Parliament, were not able to supply your people with water. The Thames Conservancy got an injunction against them for pumping more water than their statutory amount of water, and therefore, at that time, how was their income secured? Legally it was not secured at all, because they were doing illegal acts to secure it, and when that comes to be purchased, even under the Lands Clauses Act, as I will show you, it would be a very serious thing for them. But I do not think it is right that these clauses should go on being put on companies continually, because, as I say, it is altering the character of the companies. They cease to be trading companies. They become trustees for us.

(Major General Scott.) Practically the sinking fund clause entails the payment of the net profit of new capital to the public.

(Mr. Balfour Browne.) It does except to the extent of one per cent. which they call "for management."

(Major-General Scott.) Yes, that they call "for management."

(Mr. Balfour Browne.) If they can get anything out of that one per cent., that belongs to the company. All the rest of the profits go to us. Practically that is the effect of the sinking fund. Of course your Lordship

will remember that when that clause was put in (I have before me the decision of the Committee) they said: "The Committee are unanimously of opinion that the preamble is proved, but they will require the insertion of clauses providing that if the undertaking is purchased within 10 years"—then they very much use the words of the section. What they were asking was to take more water from the Thames, and the Committee gave them that power to take more water from the Thames, but they say, if it is purchased within 10 years, the fact that you are getting more water from the Thames is not to enhance your value as against the purchaser. But every one of these Acts that have been passed, evidently points to purchase, and nothing but purchase, and as I say, it is an extraordinary thing after that long history that we are still inquiring as to whether it is expedient to purchase or not.

My Lord, what has been said against the municipal management of the water undertakings? Not a word. Have you heard of one great authority, which having purchased the works, regretted it? Have they called anybody before you to show that Liverpool would like to hand over its undertaking to companies again? The thing is ridiculous. I do not want to compare the management of companies and the management of local authorities, but you will find in the evidence that the London companies' management in 1896 was 44 per cent. of the income, while the management at Liverpool was 31 per cent. But whether it is financially expedient or not, the populations of these towns are satisfied, and if you look at the evidence, you will find that in the cases that have been put before you, the financial expediency has been proved over and over again in the case of these towns. Even if it were not, even if we were going to make a loss, I say that using the words that Mr. Chamberlain used on one occasion, when he was promoting the Birmingham Purchase Bill, when he said the people will get dividends in health and comfort—I say there will be no more water famines. But what are the facts? I leave out just now the question of the form of arbitration. If we purchase the undertakings, we do so clearly upon the basis of income. The question will be first, is your income legal, have you legally got it? If it was not legally got we would not pay for it. The arbitrator would not make us pay under whatever form of arbitration. Take for instance, the fact of the Southwark and Vauxhall, just to illustrate it. They had power to take 24 million gallons a day, I think it was. They were taking 35 million gallons—I am not perhaps accurate in the figure, but it is something like that. To the extent of the difference we would not pay a farthing. They had no right to that water, they could not sell it to us. If, however, they have a legal income, the next question on the arbitration is, how is that income secured? Is it absolutely, as they talk about, as safe as Consols? I do not believe it, but I am not going to argue that now. That would come before the arbitrator at some other time. Can you say this income is secured after the history that I have been going through in every committee of Parliament, saying that they should be swept away, that they should be purchased—secured—when as General Scott put it just now, the income on the new capital does not go to them, but goes to us. Do you call that income well secured? Talk about the enormous figures that these gentlemen have been talking about here. I think when they come to arbitration, even under their great friend and favourite the Lands Clauses Act, it would not be very much. How is it secured when they are threatened even by this Commission with control—control costing thousands—millions? How is it secured when they themselves are spending millions of money to-day to put their houses in order? Although they said they were perfectly in order, when Lord Balfour's Commission was sitting, they have spent four millions of unremunerative capital since, merely to make themselves more perfect.

(Mr. H. W. Cripps.) Before you leave that, Mr. Balfour Browne, there is one thing I should like very much to be enlightened upon if possible. What was the meaning of the limitation to seven years in the one case and 10 years in the other?

(Mr. Balfour Browne.) I cannot understand it except in this way. That they thought, and I think that, if the companies are to go on they must go on as companies, and that would not be as a company. It is a monstrous thing that a company should be working not for itself but for me—the consumer—and be the trustee for me, and I think they said, if within seven

years there is purchase, good, you shall not take the Act into consideration.

(*Mr. H. W. Cripps.*) But why limit it to seven years?

(*Mr. Balfour Browne.*) Because I think if it is not purchased in seven years—it was seven years from 1896—if purchase does not take place, then the whole of the system ought to be altered. If Parliament once makes up its mind that municipal management is wrong and that company management is right, these clauses ought to be swept away, and they have provided for that at the end of the seven years or the 10 years.

(*Sir John Dorington.*) And after seven years the value would accrue to the company.

(*Mr. Balfour Browne.*) Certainly, and that is why I deprecate all these delays, because I know that if by any means these companies go on with further Royal Commissions, further reports, long inquiries, and delay my purchase, they will enhance their value by millions as against the consumers of London, and that may be part of their policy—at any rate, it is part of my policy to buy while I have that benefit which Parliament said I should have within the seven years from 1896, and it is slipping away now. With three years of it gone I want to purchase while I can get that benefit. Then I say, how is that income secured? Threatened, as these companies are, with control such as has been suggested to you here, I think they are badly secured. But I will not, of course, and I think it would be quite improper to do so, go into the question of figures here, and when my friend, Mr. Pember, talks about 80 millions for the whole of the expenditure on the works of the London companies when purchased—I think he put the first purchase at 40 millions—that is simply, of course, ridiculous. I do not believe any man in his senses could say that these companies were worth anything like that figure, and I will show you, when I come to deal with it immediately, that the companies even best secured do not get any such number of years purchase under the Lands Clauses Act as could make anything like that figure, but I deprecate discussing figures here because they will have to be discussed some day before an arbitrator.

Now, sir, if I do buy, I buy their income. The question, is it financially expedient I am coming to. I buy their income. The arbitrator has to find out what is the capital value of the income. When I have bought it I have got that income. Where does finance come in? I have got what I paid for. I have got the income. It is just as broad as it is long, but they say, "Oh, but you have got to buy our prospects as well." Admitted. I will pay for their prospects. Prospects, however, have to be discounted to present value, and when I have paid for them in the discounted amount, I have got their prospects. Where does the finance come in? No, loss. If their income is well secured, they will get a large multiplier. If it is ill secured they will get a small multiplier, but I will get the income with the security. I am going to put a far better security behind it, which will enable me to raise money much more cheaply than the companies can, because I am going to put the rates of London behind the water rates. That is what they cannot do. But up to this point there is neither gain nor loss—no question of finance in it. I have paid for the income, and I have got the income, and I have put it in capital. I get it annually into my pocket instead of the companies. No loss, and no gain. Of course, some of these companies have no prospects at all. Some of them, I am afraid, have very bad prospects. The West Middlesex has no prospects. It has got its full statutory dividends, paying annually. The whole of the prospects of the West Middlesex have to go into the pockets of the consumers, so that they are in exactly the same condition as the sinking fund companies. They are merely earning profits for the consumers of water.

(*Mr. H. W. Cripps.*) Does that apply to the West Middlesex only?

(*Mr. Balfour Browne.*) I think that is the only one that has absolutely paid up everything. The Kent Company is within measurable distance of it; the Chelsea is, I suppose, also nearly paid up, but the only one that has paid up all arrears of dividends is the West Middlesex.

(*Mr. H. W. Cripps.*) I thought it was about half the companies.

(*Chairman.*) Half the companies get 10 per cent., but they have not all paid off back dividends.

(*Mr. Balfour Browne.*) They have not all paid off back dividends. But what prospect has it? None; no increased prospective value.

(*Sir John Dorington.*) No prospect of increased value at all?

(*Mr. Balfour Browne.*) No prospect of increased value at all; because, of course, it would be upon present powers that you would value the undertaking. Therefore, if I give them exactly the income that they have to-day, as well secured and no better, they are no worse off. That is quite certain, and my friend Mr. Pope had to admit yesterday that really, from the companies' point of view, if he got a fair sum he would not be injured. As to the West Middlesex, we could tell to a jot or tittle what their security was, and we could give them a capital sum, representing their whole income; and further, by our clause we propose to give them the money necessary for the re-investment of the capital sum we hand them. What more do they deserve? I will tell you what they want. They want in addition to the millions that they would get, 10 per cent. What for? My friend, Mr. Littler, yesterday told you that the 10 per cent., or the 20 per cent., or the 40 per cent., or whatever it was that was given, was given for prospective value. This company has no prospective value. Why should it have the allowance? The struggle about the Lands Clauses Act I will show you is entirely in order to get a vague clause which I will refer to immediately, in order that they may screw out of the arbitrator a bonus beyond the value, and that the London County Council, I say rightly, object to pay. Supposing it were that Mr. Smith's valuation was right—I think it was 33,000,000*l.*—supposing that were the value of the undertakings to-day—(I think the 33 millions is fearfully exaggerated, but I will take it)—then why should the people of London give those companies, besides that value, 3,300,000*l.* for nothing?

(*Mr. H. W. Cripps.*) You are aware, I suppose, that Mr. Smith's calculation did give it to them?

(*Mr. Balfour Browne.*) I daresay it did—very likely—I cannot say.

(*Mr. H. W. Cripps.*) It is a fact, I think.

(*Mr. Balfour Browne.*) I do not think so. I think that was by agreement.

(*Mr. H. W. Cripps.*) Yes, it was an agreement; but in the agreement, in making up the money, it was put in.

(*Chairman.*) That is not my recollection.

(*Mr. Balfour Browne.*) I do not want to discuss this Smith matter at all. I merely take it as a figure.

(*Mr. H. W. Cripps.*) I do not think it is at all really important to the matter one way or the other, because it is quite a bygone matter.

(*Mr. Balfour Browne.*) Yes, I am only taking it as a figure, because I do not want to put any figure upon these companies myself. But taking it that it was their full value, supposing they proved the full and fair value of their undertaking to be 33,000,000*l.*, why should they have 3,300,000*l.* beyond? For the life of me, I cannot see. They are, as I will show you, under the clauses of the Lands Clauses Act, to be fully compensated; and I think it would be a reasonable thing, as we propose to give them something to enable them to re-invest; otherwise, out of the 33,000,000*l.* they would have to take something for the cost of re-investment. But, beyond that, I do not see what they are entitled to. I have dealt with the West Middlesex.

(*Mr. H. W. Cripps.*) The Act, of course, says all that, but if I am right in my recollection, subsequently the Committee said those terms were not fair.

(*Mr. Balfour Browne.*) That is so.

(*Mr. H. W. Cripps.*) Therefore that is out of it.

(*Mr. Balfour Browne.*) That goes. But I am not upon this arrangement at all; I am merely taking the figure, and I am going to argue that they are not entitled to any bonus beyond the value of the works. Prospective value I give them.

(*Sir John Dorington.*) You say the value of their works. Then what about the Stock Exchange value as on the market?

(*Mr. Balfour Browne.*) Stock Exchange value I do not think should guide either you or an arbitrator.

(*Sir John Dorington.*) Are you going to argue that?

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(*Mr. Balfour Browne.*) I am. First the Stock Exchange value was happily called by my friend Mr. Moulton when he was giving evidence, a reputed value or an abuse value. The Stock Exchange do not know all the circumstances of the companies. Nobody, for instance, buying Southwark and Vauxhall shares last year knew that they were contravening the law by taking water that they were not entitled to. The Stock Exchange did not know that. They thought they had a right till the Court of Chancery enjoined them. Further than that may I say what the market price means? Two shares may change hands to-day, and that is quoted: No shares may change hands for the next year. This quotation of to-day still stands. There is not a great deal of dealing in these shares. They are very well and firmly held, and Stock Exchange value is not real value such as you would get when you inquire into the whole of the circumstances of the case before a competent arbitrator. I think Mr. Banbury himself expressed the view that the Stock exchange was not to be taken as a real criterion; and he said, I think, that he wanted an equivalent stock merely secured by the water companies' income. I am afraid that would not be done, because if the water companies' income in our hands fall short, the rates must be behind; so that the real effect of paying in that way, as Mr. Banbury suggested, would be giving them, not the same security, but a better security than they at present have.

(*Sir John Dorington.*) Why would the rates fall short in your hands?

(*Mr. Balfour Browne.*) I do not think they would—I think myself they would increase; but if they ever did, they would have the rates of London as well as the water companies to look to, because it is in the hands of the London County Council. Of course Mr. Banbury is a very high authority, and I will just read what was put to him. This is at question 13,963: "We have had a very similar experience with regard to tramways of London. There the question arose as to what, having regard to the legal position of the companies concerned, was the value of the securities of the London Tramways Companies; the London County Council thought one thing and the City apparently thought the other, because the question depended upon the determination of the legal position?" and the answer was, "I do not think the price in the market is a true criterion of the value. I think I said that very clearly, I meant to if I did not." In the next question and answer I think he repeats the same thing with an illustration, so that I may take it that market value is not a criterion that we could go upon.

(*Chairman.*) I think Mr. Banbury meant that the market value was below the real value.

(*Mr. Balfour Browne.*) Probably. I think it may sometimes be below, and sometimes far above.

(*Chairman.*) Yes.

(*Mr. Balfour Browne.*) But it is sufficient for my purpose that it is not the real value, and therefore, it cannot be taken as an absolute test. It is always said, however, "After this you pay for our present income; you pay for our prospects," but they say "It is not financially expedient that you should purchase because of the sinking fund—not their sinking fund but our sinking fund." Again I say it is a little late in the day to discuss first principles of local government. This is not an incident of purchase, it is an incident of local government. Every corporation that has ever bought has bought upon the terms that it should not burden posterity for all time—that is the whole principle. But what is the sinking fund? With regard to the sinking fund, if you take it into consideration in this question of finance, you are making me buy the works twice over. I have bought them for 30,000,000*l.*, we will say, but the sinking fund is to buy them again.

(*Sir John Dorington.*) From you.

(*Mr. Balfour Browne.*) Buy them again from me for posterity. It is the second purchase, and, if that is so, it is financially inexpedient because of the sinking fund. They are putting two purchase prices upon me, which is absurd. The sinking fund ought to be left out altogether, but in the calculation that I am going to submit I will include the sinking fund, and show even then that it is financially expedient that we should buy. Suppose we buy, as Mr. Haward said, on the 1st of April, 1901. I take the net profits of the companies after paying debenture interest, which of course

is in a different category. He says: "We will enjoy at that date the net income which will be 1,030,000*l.*, which is made up three figures. 924,000*l.* is the companies' income. Suppose, my Lord, just in passing, that I multiply that income by 30 years' purchase, which is a good round figure; that gives 27,720,000*l.* I think 30 is too big a figure myself for the London Water Companies, but that, of course, will be for the arbitrator to determine. But I am going to show that upon any purchase we should have money in hand. 1,030,000*l.* is what I would enjoy, and is made up of three figures; the companies' income 924,000*l.*, the Chamberlain's sinking fund in that year, which we would not have to pay, and which would be saved to us 56,000*l.*, and Mr. Haward's 50,000*l.*

(*Chairman.*) In what year?

(*Mr. Balfour Browne.*) In 1901. I think that it would probably be that year before the arbitration could take place. I take the economies which Mr. Haward thought would be 50,000*l.* in that year. Mr. Smith, remember, put the economies at 96,000*l.*, but I am not going to take Mr. Smith's figures, but Mr. Haward's 50,000*l.* These three figures together—the companies' income, which I have got; the Chamberlain's sinking fund, which I save; and the 50,000*l.* economies—give me 1,030,000*l.* Now what would I have to pay? I am going to take the sinking fund into consideration, although I think it is quite improper. If I got 60 years' purchase, I have to lay away for every million 33,353*l.*, if I get 80 years' purchase I have to lay away 30,026*l.*, if I get 100 years' purchase I have to lay away 28,312*l.* for every million. I do not know, my Lord, why we should not get a long period. It is entirely a question for the people of London and England to say when I am to pay it back. If they want to be taxed heavily, give me a short period. If they want to be taxed lightly, give me a long period. I have a list here from which I see that the town of Huddersfield has for some of its waterworks got 100 years; Birmingham for some has got 90 years; Stockton, 90; Blackburn, 80; Cardiff, 80; but, of course, I must take it on one figure for the purposes of my calculation, and I will take it that we only get 80 years. Then if we get 80 years, that 1,030,000*l.* will enable me to pay the sinking fund and everything without loss. It will enable me to pay 34,300,000*l.* for the water companies. Of course, if I pay less I have money in pocket; if I pay more the people of London will have to bear the burden.

(*Sir John Dorington.*) You would require a sinking fund for the debentures as well, would not you?

(*Mr. Balfour Browne.*) No. Should I?

(*Sir John Dorington.*) I was asking you.

(*Mr. H. W. Cripps.*) You would not pay the debentures, I presume, at all. The debenture holders would be your security instead of the security of the companies.

(*Chairman.*) The debentures are all of them irredeemable, I think, are they not?

(*Mr. Lewis.*) Some are redeemable.

(*Mr. Balfour Browne.*) There are never irredeemable stocks now. The debentures of the companies may be irredeemable, I do not know.

(*Mr. Hollams.*) Some recently issued are redeemable in 25 years. It is a very small percentage.

(*Mr. Balfour Browne.*) I am going to deal with the debenture stocks immediately; but I have been dealing simply with the shares of the companies. If I am right in that, I can afford to pay 34,300,000*l.* without a penny of loss, and pay my sinking fund besides, remember, I have got money in hand for everything if I pay not more than 34,300,000*l.* I am told that the committee presided over by Mr. Plunket, now Lord Rathmore, thought, and apparently there seems to be a recognition of it, that we might have a longer term than usual; but, of course, that would be for Parliament to determine. If Parliament decides to give us 100 years, so much the better for us. If it determines to give us 60 years, so much the worse. But we cannot go into the question of financial expediency till we know what Parliament does, and here I am trying to show that upon a moderate calculation we get 80 years. If so, I could pay everything and make no loss—not put one penny on the rates of London; and remember I am purchasing back the works by the sinking fund if I have only to pay 34,000,000*l.* to these companies.

(*Chairman.*) That does not include either debenture interest or any compensation.

(*Mr. Balfour Browne.*) No, it does not. Compensation for what, my Lord?

(*Chairman.*) To dismissed officials, to directors, and so on.

(*Mr. Balfour Browne.*) No, directors never get compensation.

(*Mr. Hollams.*) The County Council proposed it themselves.

(*Mr. Balfour Browne.*) I never heard of directors getting compensation, and I have been in a great number of these cases. Fixed officials get compensation, but I think a large number of fixed officials, instead of getting any compensation, would probably be employed.

(*Chairman.*) Yes.

(*Mr. Hollams.*) It was proposed by the London County Council in the Bill of 1895.

(*Mr. Balfour Browne.*) Very likely to tempt them to be quiet; but we shall not do it now. I am speaking of the practice; and Sir George Bruce, who is here, has been in a great number of arbitrations, and he will bear me out when I say I have never seen compensation given to directors for displacement of office.

(*Major-General Scott.*) That does not contain anything for prospective increase in income, does it?

(*Mr. Balfour Browne.*) No, it does not.

(*Chairman.*) On the other hand, as to your figure of 1,030,000*l.* which you reckon upon as your income, does that include presumed increase up to 1901?

(*Mr. Balfour Browne.*) No, my Lord.

Chairman.) Yes, it does, if you look back.

Mr. Balfour Browne.) Till 1901.

(*Chairman.*) Yes, you stop there.

(*Mr. Balfour Browne.*) Up to 1901 I have paid them.

(*Chairman.*) Yes, but you assume now up to 1901 you are going up to that figure which you gave—I forget the exact figure.

(*Mr. Balfour Browne.*) 924,000*l.*

(*Chairman.*) If you assume that it is not unreasonable to assume that there will be an increase after 1901.

(*Mr. Balfour Browne.*) Yes, true.

(*Chairman.*) And that that should be paid for.

(*Mr. Balfour Browne.*) And it will be paid for.

(*Chairman.*) But it is not in this figure.

(*Mr. Balfour Browne.*) No, and I will tell you why it is not in that figure. It is because I am going to get the increase. The increase that I have to pay them for is the increase I am going to get. I do not need to have money now for it. Remember it is discounted back to present value. Any increase I pay for I get and therefore I do not include it in that figure.

(*Mr. H. W. Cripps.*) Do you mean that it would not be a fair contention on their part to say that the increase which you yourself contemplate for a short time may continue for a long time?

(*Mr. Balfour Browne.*) I think very likely.

(*Mr. H. W. Cripps.*) Therefore you are losing.

(*Mr. Balfour Browne.*) No, not at all. I have not included it in the money that I have put down as the purchase money, because I am going to get the increase. I am only trying to see whether, if I give them the sum of 34,300,000*l.*, I will have to put anything on the rates of London. If I have not, the whole question of financial expediency goes because I can bear the burden without a farthing on the rates.

(*Mr. H. W. Cripps.*) You mean so far as the rates are concerned it goes entirely, but I understand what the argument of the companies would be on the other side—that they are giving up something of prospective value.

(*Mr. Balfour Browne.*) But they shall have the money for it. I am going to get prospective value for which I pay, and therefore I do not put it in my calculation here because it is unnecessary.

(*Mr. H. W. Cripps.*) You would allow that they would be entitled to put before the arbitrator anything as to prospective value which they could reasonably show.

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(*Mr. Balfour Browne.*) Certainly, absolutely, and when the burden discounted falls upon me I get the increase.

(*Mr. H. W. Cripps.*) Yes.

(*Mr. Balfour Browne.*) If I pay too much for the increase, of course I would be out of pocket, but I am assuming that I pay the fair value of the increase.

(*Chairman.*) It is a small matter. You pay the present value of the deferred annuity, and therefore for the first half you pay rather more than you get, and in the last half you get more than you pay for.

(*Mr. Balfour Browne.*) Yes.

(*Mr. Lewis.*) May I ask you a question? How do you arrive at 924,000*l.* as the income?

(*Mr. Balfour Browne.*) You will find that was calculated for. You had Mr. Haward dealing with it at Question 2747. It is a calculation of the increase up to 1901, because of course it would not be fair to say, I am going to buy in 1901 upon the income of 1889 because the companies would say that it is not our income, our income is much larger than that, and it was calculated to be the increase to 1901.

(*Mr. Lewis.*) But the net income at the close of 1897 was over a million—a million and thirty-two thousand, and the dividend in that year was 973,000*l.*, and therefore if you go to 1901 those figures—

(*Mr. Balfour Browne.*) You are probably including the debenture profit.

(*Mr. Lewis.*) Perhaps.

(*Mr. Balfour Browne.*) But mine is simply upon share capital, and I will tell you why I have left out debentures.

(*Mr. Lewis.*) No, I am taking the net income. The net income is the gross income after deducting the interest upon the debentures.

(*Chairman.*) I have another difficulty. I do not quite see how you can reckon the Chamberlain Sinking Fund in 1901 as being a permanent part of the income that you will buy.

(*Mr. Balfour Browne.*) It will be saved. It will not be paid. It is paid by the company in that year, but it will not be paid by us. Of course the Chamberlain's Sinking Fund passes away if I purchase.

(*Chairman.*) I thought you said the income you got was made up of three figures, one of which was the company's income, 924,000*l.*

(*Mr. Balfour Browne.*) The income we should enjoy.

(*Chairman.*) The three figures are 924,000*l.* income, 56,000*l.* by the Chamberlain's Sinking Fund, 50,000*l.* savings making in all a million and thirty thousand.

(*Mr. Balfour Browne.*) That is so.

(*Chairman.*) Then I say you will not get that Chamberlain's Sinking Fund after 1901.

(*Mr. Balfour Browne.*) But it would have to be paid by the company, and therefore it is saved by us. It would have to be paid.

(*Chairman.*) I see.

(*Mr. Balfour Browne.*) It is in the same category as the economies.

(*Chairman.*) Yes.

(*Mr. Balfour Browne.*) I see I have taken this from Mr. Haward's evidence beginning with question 2744, and there he brings out the very figure that I was dealing with, namely, 34,300,000*l.* And he calculates on the assumption that we pay that amount. That is not a remote value of their undertaking at all, but he says, I can afford to pay that out of the income we will then be enjoying in 1901.

(*Sir John Dorington.*) We have a return of the dividend here in 1897, and it might be worth your while to have the exact figures. This is a return by the companies. It brings out 973,741*l.* 18*s.* 6*d.* as the dividend for the year 1897.

(*Chairman.*) It is not very important.

(*Mr. Balfour Browne.*) My Lord, I cannot lay my hand upon the quotation, and I do not want to waste your time, so that I will pass from it.

(*Chairman.*) I have got all the references somewhere on my notes, and I have got all these figures.

(*Mr. Balfour Browne.*) Very well. Now, as I say, if I have to pay more than that, I have to rate London,

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If I pay less, I give something to the relief of the rates of London. But there is nothing extraordinary about the finance of this matter. Every other town has gone through exactly the same process. I am bound to say I think many of the companies that have been purchased have been better companies than some of the London ones. Take, for instance, the East London Company—in default last year—that is not a very satisfactory company, and it would not get a very large number of years as multiplier if it went to arbitration. But there is nothing in this case that differs from any other case that ever has been dealt with except that it is larger in size. Now, why because it is a big matter there is any difference in principle between a big and little one to be recognised I cannot conceive. These companies are passing into the hands of corporations almost every day. Sir George Bruce will tell you he has been sitting on two or three arbitrations within the last year where the transfer from a company to an authority has taken place either in the case of gasworks or of waterworks, and we who are practising at the Bar are continually engaged in these transfers, and I say there is nothing different in this case from those except that it is a bigger matter. There is nothing different in principle. The authority in these cases is recognised as the right authority to deal with the waterworks and wants to get it into its hands, and so does London. On the very last division in the London County Council, when the Bills were promoted, there were 101 voted for the purchase Bills proceeding and 15 against, I have no doubt Sir John Lubbock and Mr. Whitmore were amongst the 15, but if London wants to get the waterworks into its own hands, and it does, or its vote would not be in that way, why should not they? They are the people that have to pay the piper, and why should not they call the tune—and they call the tune of purchase as strongly as they can.

I have found the reference I was looking for. My friend Mr. H. L. Cripps has been good enough to find it, and I see Mr. Haward gave the figure in answer to a question of Major-General Scott's. It is Question 2767.

(Chairman.) What is?

(Mr. Balfour Browne.) The 924,000*l.* income, which I say is the income in 1901. It is their calculation, because he starts with the figure of 980,000*l.*, he deducts the 56,000*l.*, which is paid to the Chamberlain's Fund, and that brings out 924,000*l.* and it is in that way that he gets that figure, but I do not want to go back upon that now.

Now, what is the experience, my Lord, with regard to finance? At Question 3538 there is a table put in showing in the county boroughs of England and the principal towns of Scotland what has been the last financial year, and what is the experience in each of these cases. There were 28 towns and four towns given. In 28, a surplus over expenses was shown, and in only four cases was there a balance the wrong way, that is a deficit, and in each of these cases the deficit was caused by the fact, not of the waterworks proving inefficient, but because the corporations were expending large sums of money on new works. Take, for instance, the case of Birmingham. I have no doubt there is a deficit and Birmingham is rated for its waterworks. Why? Because it is spending millions of money. The whole cost of their Welsh scheme is 6,500,000*l.*, and they are spending millions of money there in Wales, and they are not getting any income from it, but does anybody say that is not financially expedient? Parliament sanctioned it, and Parliament said, you will have to pay rates while you are making these large works. In the same way at the present time I believe Vyrnwy is a burden on Liverpool. But does anybody say it is not financially expedient that they should have had that burden? I think if you care to ask anybody at Liverpool you will find they are all content with their bargain. They have got splendid water, and in the future when they get a larger consignment, as the Scotch call it, or a larger number of consumers, when they are able to sell water to other people, I have no doubt it will be a very profitable undertaking indeed. Then take again the case of Glasgow, which is given at Question 4137, and with regard to which a table is put in. By that table you will see that Glasgow began by charging when it purchased the companies 12*d.* in the *£*. The rates paid are 6*d.* in the *£*. Is not that a good illustration?

Of course a great number of corporations are not allowed to transfer anything to the general rates of the

town—Worcester, Liverpool—these two occur to me at the present time. I have dealt with the Acts recently. Wherever Liverpool has in any one year a surplus it has to take that surplus into consideration next year, and only to levy rates sufficient with that surplus to pay working expenses. Therefore, of course, you cannot show profits in that case, because all the profits go to reduce the price of water. In all these cases—take the four principal towns in this country—since transfer took place, Glasgow, Liverpool, Manchester, and Birmingham, they each one of them have deserted old sources of supply and have gone to new, and to greatly improved sources of supply. Manchester to Thirlmere, Liverpool to Vyrnwy, Glasgow to Loch Katrine, and Birmingham to the valley of the Eian. In each case they had a surplus, as we will have. In each case the people are satisfied, and apparently there is not a proposal, and there never has been a proposal in any one case, so far as I have ever heard of, of a transfer from a corporation into the hands of a company. And why should London be the exception? Why should the municipality of London not do exactly what the municipalities of these great towns are doing, and doing to the satisfaction of their own consumers? An attempt was made by Mr. Hawksley in certain tables to compare the rates levied in London with the rates levied in various provincial towns. I am glad to say it is not necessary to comment upon that. It was obvious at the time, that he was comparing two things that were not comparable, but the *coup de grâce* to that table was given by Mr. Wilkins, who came for the Lambeth Company, and said, you cannot compare the rates of Lambeth with the rates of other parts of London, and a comparison is absolutely futile. If you cannot compare the rates of two parts of London, how on earth can you compare the rates of London with the houses in Manchester, Blackburn, Blackpool, and the various places mentioned in Mr. Hawksley's table? Of course, it is quite obvious that it was illusory. A house that I can get in a small place like Blackburn for 50*l.* would cost me 100*l.* or 150*l.* in London. He is comparing two houses of 50*l.*; but you ought to compare a house of 50*l.* in Blackburn with a house of 150*l.* in London, and so Mr. Hawksley's table absolutely goes. Then, I think, Mr. Pember practically threw it over also, because I see quite early in his speech he says: "Take such a thing, for instance, as the exact comparison of the rates of London with the rates of the large towns. I would venture to say, that that is 'what I have called a by-path,' and having called it a by-path, he leaves it alone discreetly."

Now, my Lord, just let us see if I cannot show that with regard to the future expenditure there will be an immense gain to London by transfer. It is with regard to the raising of capital in the future that the gain is to come in. I do not think, after the evidence that has been put before you, that anybody can doubt that enormous expenditure must take place in whosoever hands the water supply of London is put. Take the Staines scheme which they say is the right one, and which we say is the wrong; that, according to the companies themselves works out at 13,568,349*l.*, according to Sir Alexander Binnie it is to cost 17,561,580*l.* Now, my Lord, one of these sums must be spent by somebody. I want to show that if it is spent by us, it will be a financial gain. If it is spent by them, it will be a financial loss.

(Sir George Bruce.) That was on the basis of the year 1898, was it not?

(Mr. Balfour Browne.) It was on the year 1898. I am taking the worst year.

(Sir George Bruce.) I quite understand.

(Mr. Balfour Browne.) Now what will it cost? Mr. Pember seemed to think that all the future capital would be raised by debentures. That is absurd. In the first place, if it were, every new batch of debentures that you raise would have to be raised at a higher rate of interest, because you have not got the security of the ordinary stock behind it or before it—it does not matter which. But it is contrary to the practice of Parliament to allow debenture stocks to be raised by companies unless there is a certain proportion to the rest. We know that in the case of gas companies they make it one-fifth of the debentures to four-fifths of the ordinary stock. In some very well found companies I believe they have allowed it to be a third; but I am taking it that these companies would raise one-fifth by debentures and four-fifths by shares. Mr. Pember was wrong again in saying that the interest that they have

to pay in order to raise money was 2·95 per cent. He had taken it debentures and shares all together. The real interest that they have to pay may be looked at in connexion with what Mr. Pember calls a statical company, the West Middlesex. The West Middlesex Company's shares are paying, if you buy them, 3·25 per cent. Therefore, I say, the West Middlesex being as secure a company as can be—absolutely secure, because it is secured in every way by a reserve fund, and by these moneys that it is handing over to the public—that is an indication of what they can raise money at. Now let us take it in that way. I have got a calculation here a little different. I say they could raise money at 3l. 3s. 6d., while their 3·25 is a little more than that. It is 3l. 5s.; but I have worked it out upon the 3l. 3s. 6d. basis. The London County Council can raise money at 2l. 10s.; but as Mr. Haward told you, there was 2s. to be added to that for expenses that fell upon the London County Council for the management of the fund by the bank, I think, or something of that sort. Therefore, that is 2l. 12s. I deduct the 2l. 12s. from the 3l. 3s. 6d., and I say every hundred pounds of these millions that I have been speaking about will be raised at 11s. 6d. less in our hands than in the hands of the companies. I do not believe the companies could raise this immense amount of money at the same price as the West Middlesex is standing at to-day, but I must go upon some figure, and I take that.

Then Mr. Haward also told you about the saving in expenses. If I was right in leaving out the sinking fund, I could stop there and say there is an immense gain at once; but I am going to take off the sinking fund against myself, and if I take off the sinking fund, I have also a right to take credit for the savings, and these are 4s.; that is, the 50,000l. works out at 4s. per cent.—that makes 15s. 6d.; take the sinking fund, 8s., off that, and then I have got 7s. 6d. to the good upon every hundred pounds. Now 7s. 6d. on a hundred pounds represents annually upon the 13 millions odd which they say has to be spent, 50,881l.; but on the 17 millions odd that I say has to be spent, or Sir Sir Alexander Binnie says has to be spent, it represents an annual saving of 65,855l. On the question of finance I am entitled to say there is a gain to the people of London at once. On these expenditures which they say themselves must be incurred for the Staines scheme there is a gain by our raising the capital at the cheaper rate as compared with their rate. Then take the figures that Mr. Pember gave the day before yesterday. He said the total capital commitments of the various companies, apart from this great Staines scheme, are 13,750,000l. that has to be raised by them. If it has to be raised by them, I will assume that it may have to be raised by us. Again a gain of 51,562l. Then take the Welsh scheme.

(Chairman.) The 13 millions is not in addition to the Staines expenditure, is it?

(Mr. Balfour Browne.) Yes; it is, with great respect, because if you look at Mr. Pember's figures, he works it out with regard to all the different companies, Kent and others, and so includes things which are totally separate from the Staines scheme.

(Chairman.) From the existing Staines scheme; but it covers all the Staines expenditure, which makes up the 13 millions.

(Mr. Balfour Browne.) I think not, my Lord. I think you will find that is so.

(Chairman.) I daresay I am wrong.

(Mr. Balfour Browne.) I think that is so.

(Chairman.) I have drawn your attention to it, that is all.

(Mr. Balfour Browne.) I had looked at that carefully before I made the statement.

(Chairman.) Very good.

(Mr. Lewis.) I should like to point out one thing, and that is, it appears that your figures are based on the assumption that these companies may raise this additional capital of 12 millions by shares.

(Mr. Balfour Browne.) No. I am assuming that they raise four-fifths by shares and one-fifth by debentures.

(Mr. Lewis.) Four-fifths by shares. Is it to be supposed that Parliament would permit them to go on borrowing?

(Mr. Balfour Browne.) I do not think so.

(Mr. Lewis.) Because at present their ordinary stock is 10 millions, and their present debenture stocks are over 6 millions.

(Mr. Balfour Browne.) Yes. It would not make a bit of difference, with great respect, because whether it is borrowed by debentures or raised by shares, the security is exactly the same.

(Mr. Lewis.) Yes, but the companies at the present time are able to raise debenture stock at something less than 8 per cent.

(Mr. Balfour Browne.) Because of the security of the ordinary stock before it, but if you raise all future capital by debentures, you may call it debentures, but it is no better security than the existing works. It has exactly the same security as if it were raised by shares, so that it would be raised at precisely the same amount, I think.

(Sir John Dorington.) You would drown the share capital.

(Mr. Balfour Browne.) Drown the share capital, and I do not think that it would be permitted; but if it were permitted, the borrower would speak out and say: where is my security? I know that up to the present time I have got good security—that I have the first pull of the whole income, but if there is to be nobody else but debenture holders in it, of course his debentures are not secured by the ordinary shares. My calculation is on the assumption that I only save 7s. 6d. If I knock off the sinking fund, as I think I am entitled to do, because, as I have said, it is buying it twice over, then that 13,568,000l. for the Staines scheme would be raised by me at 100,000l. cheaper per annum than by the companies, or if it is the 17 millions of Sir Alexander Binnie, it is 120,000l. or 130,000l. a year less, or a gain to the consumers of water in London of 130,000l. on that new capital alone. I have said the same with regard to the other expenditure, but I am not so sure of that, because I believe very likely that if the companies were passed into the hands of the London County Council, some of these other expenditures that Mr. Pember was taking credit for in making up his 13,750,000l. would not take place. Take Mr. Pember's own figure. I do not agree with him for an instant that the Welsh scheme is going to cost 52 millions, but that is what he says. But I will test this question by it. Supposing it does cost 52 millions and supposing it is to be carried out by the companies, on that calculation that I have given you only on the 7s. 6d., it would be 195,000l. a year more (that is if it is carried out by the companies) than if it were carried out by us. I should have thought that there was no question about the financial expediency under these circumstances of letting the prospective works, whatever they are, be carried out by the local authorities instead of by the companies. Why are we able to borrow more cheaply? Because we give the better security—not only of the water rents of London, but of the rates of London.

(Mr. H. W. Cripps.) I am not quite sure that I understand you on one point. Do you assume that, if this went on, that you would still set aside a sinking fund from year to year if it were in the hands of the London County Council, as has been done by the companies?

(Mr. Balfour Browne.) No, Sir; I assume that Parliament would put upon me the ordinary obligation of a corporation—to lay away such a sinking fund as would replace the whole capital in 80 years.

(Mr. H. W. Cripps.) Just so—you would have something to put aside.

(Mr. Balfour Browne.) Yes.

(Chairman.) There is great confusion in calling that a sinking fund. It ought to be called the Chamberlain's Fund."

(Mr. Balfour Browne.) Yes. I ought to call it the "Chamberlain's Fund" in the one case, and the ordinary sinking fund of a corporation in the other.

I think in this connexion I may just refer to what Mr. Pope said in his speech. There is that suggestion which Sir Alexander Binnie made, namely, "it may be that in the future supply of London the public body would have the advantage in raising easily and freely capital required for such extension"—more easily than the water companies—and if the inclination of the Commission is ultimately to the necessity of going elsewhere for water, it does seem to me then that there is a grave question for consideration. If, for instance, the County Council are

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"right in saying we must go to Wales and not extend in the valley of the Thames, then that is a duty which is cast for a scheme applicable to the whole and not to any particular one of the companies—applicable to the whole of London, and I own it seems to me that it would be impossible for any one company to undertake the duty of raising the capital to provide for such a general extension. Of course, in proportion as you come to the conclusion that the necessity for the Welsh scheme becomes remote so much less forcible does the point become. If it is necessary to go to Wales, then it does seem to me frankly—and I think the companies would fairly admit that—that there is some necessity to provide for the raising of the capital which is necessary in order to bring such a supplementary supply. That has been, in a minor degree, already discussed before the Commission." I do not believe that the companies could go to Wales, and I will tell you why. I am not going into the Welsh scheme or the Staines scheme. This is why they have gone for the Staines scheme—it is a thing that could be carried out by small instalments, it is a thing that they can finance and raise capital for. They cannot go to Wales. It would mean the amalgamation of the companies in the first place, and on that amalgamation we would have something to say. I think then would come the time when very drastic control would be applied to these amalgamated companies.

Now, further than this, let me say that our Bill provides for the redemption of the debenture stock of the companies. If we redeem it, it amounts altogether to 7,300,000*l*. We believe that a saving of 5*per cent*. could be effected, and if we are right in that, that would be a saving of 18,250*l*. per annum to the consumers of water in London.

Then, my Lord, one word with regard to the question of the Lands Clauses Act. All the companies have come here and said, we deprecate control. We do not so much deprecate purchase. All that we want is the Lands Clauses Act. Their idea is that under that Act they would get more than under our special clause. That is the whole idea of it. I think it is a mistaken idea, and I will tell your Lordship why. I think there is very considerable ignorance about the Lands Clauses Act. People have not read it. The Lands Clauses Act begins as to purchase by agreement up to section 16. Do they want that? By all means we will purchase them by agreement. That is not what they want. The compulsory sections begin at section 16, and there are none of them applicable; none till you come to section 63. The first section I take is section 16, and this is the heading, your Lordship remembers they are in sets of clauses, "And with respect to the purchase and taking of lands otherwise than by agreement, be it enacted as follows." Then section 16 is as to the: "Capital to be subscribed before compulsory powers of purchase put in force." That is not applicable. Section 18 is as to the notice to treat which you are very familiar with, but that is not applicable. There is nothing that touches it. We go on through every section, and we find there is a lot of machinery for the service of notices, and so on, and then there is in section 20 service of notice on the corporation, that is after notice to treat. Then there is to be 21 days as to the appointment of arbitrators. Nothing touches it at all till you come to section 34, I pledge myself to that. It is section 34, and section 34 is to this effect: "All the costs of any such arbitration and incident thereto to be settled by the arbitrators, shall be borne by the promoters of the undertaking."—that would be the County Council, because we would be the promoters—"unless the arbitrators shall award the same or a less sum than shall have been offered by the promoters of the undertaking, in which case each party shall bear his own costs incident to the arbitration, and the costs of the arbitrators shall be borne by the parties in equal proportions." That may touch them. Do they want that? Is that what they desire? The Arbitration Act leaves the costs in the discretion of the arbitrator. This gives them their costs, unless the arbitrator awards less than we have offered. If that will satisfy them, I have not the least doubt the County Council would agree to that clause going in. What else is there in the Act? I have passed over the tribunal clauses, because, my Lord, that is not applicable. Is that what they are here for, to say that they should be at liberty to appoint one arbitrator, that we should appoint another, and that those two arbitrators should appoint a third? I do not think so, my Lord. I think that the companies would agree with me that

the arbitrator should be the best possible man that could be got in England to do the work, and that he should be named in the Act. Is there any objection to that, or are we to go upon this ancient machinery of appointing one person and they appointing another who is to appoint a third? I say it should be done by Act of Parliament, and that the name of the distinguished person, whoever he is, that is to decide these matters should be put in the Act of Parliament.

(Mr. H. W. Cripps.) I think the Chairman of the Water Committee, Mr. Dickinson, agreed to that.

(Mr. Balfour Browne.) I am perfectly certain that it is right, at any rate. I pass over all the other sections, because they have nothing to do with it, till you come to section 63. Section 49 is as to severance. That cannot be, because there is to be no severance. That deals with severed land. Then section 63 is the only section in the Act that deals with the matter, and these people come and talk as if the Lands Clauses Act was going to give them great things. What does it do? Section 68 is, of course, an important one, but that is only as to injuriously affecting. Section 63 is as to the purchase money and the mode of estimating the compensation.

(Mr. H. W. Cripps.) Why should you be afraid of their desire to have the Lands Clauses Act?

(Mr. Balfour Browne.) I will tell you exactly why, I am not really afraid myself, but I will tell you why we have adopted the clause we have. I would not be afraid of this, but let me read it.

(Mr. H. W. Cripps.) I cannot understand why anyone should be afraid.

(Mr. Balfour Browne.) I am not afraid; let me read it. This is the only clause really that affects it. "In estimating the purchase money or compensation to be paid by the promoters of the undertaking in any of the cases aforesaid, regard shall be had by the justices, arbitrators, or surveyors as the case may be, not only to the value of the land to be purchased or taken by the promoters of the undertaking, but also to the damage, if any, to be sustained by the owner of the lands by reason of the severing of the lands taken from the other lands of such owner or otherwise injuriously affecting such other lands by the exercise of the powers of this or the special Act, or any Act incorporated therewith."

(Mr. H. W. Cripps.) What harm can it do?

(Mr. Balfour Browne.) None; what is the good of it? There can be no severance of lands. What is the good of it to them? I will tell you what they think. They know that arbitrators have foolishly got it into their heads that although it is not mentioned in the Act they are bound to allow a bonus to a company and they think if it was put under the Lands Clauses Act they would get that bonus. The interpretation of that clause, my Lord, was given in the case of *Stebbing v. The Metropolitan Board of Works* (I am only reading from a text book, but it is so familiar to the members of the Commission that I am perfectly certain they will let me do it):—"The principle that the compensation to be paid to the owner was the value to him as distinguished from the value of the land to the promoters was laid down in connexion with disused burial grounds." Your Lordship will remember the vicar sold it.

(Chairman.) Yes, you need not refer further to it.

(Mr. Balfour Browne.) That is the principle of the Act. If they think that there is anything in my clause which says that it is to be the value to anybody but them they are entirely wrong. What do they want? Now I will go to my clause and show you that there is nothing in it that touches them or hurts them. What we mainly object to and what we have taken it out of the Lands Clauses Act for is that antiquated machinery about the tribunal. We do not want one surveyor appointed by us and another appointed by them. We want somebody mentioned in the Act as in these cases of the European Assurance Company and the Chatham and Dover Railway Company Arbitration Acts and we want the most able and distinguished man we can possibly get for the purpose. Our clause is the clause that was practically adopted—I say practically because it never was really adopted—by the Committee in the House of Commons. If you have the clause before you, you will follow this. This is the decision of the Committee, said Mr. Plunkett: "The Committee are of opinion that if this Bill should become law and if the consideration to be paid by the London County Council for the transfer of the undertaking is to be determined by

"arbitration, the arbitrators are in determining the fair and reasonable value of the undertaking to have regard to all the circumstances of the case as provided in lines 30 and 31, page 7 of clause 6 and the Committee would be willing, on consideration of the clause, to introduce if necessary other general words in order to render it absolutely clear that the arbitrators are not to be precluded by any legal objections from entertaining all the circumstances which they may think it right"—that is at page 213; this explains some words which your Lordship, I think, did not follow, or said you could not interpret—"to take into their consideration, say, for instance the Report of the Royal Commission of 1893." One of the objections made was that the arbitrator in the ordinary sense would not look at that report and that the idea of the Committee was whether legally and strictly he could look at it or not he ought to be entitled to look at that report; and the same might be said of your report supposing you make a report. Strictly and legally speaking before an arbitrator under the Lands Clauses Act I have great doubt as to whether we would have a right to go and say this or that took place before Lord Llandaff's Commission. We would have a right, of course, to turn up the evidence and cross-examine a man upon what he had said, but we could not go strictly speaking into what took place here. But it was the intention of the Committee that these things might be gone into and that is why you find in the preamble that whereas failing agreement to purchase and in order to determine the fair and reasonable value of the undertaking it is intended to provide that the arbitrator should in determining such value have regard to all the circumstances of the case—the very words Lord Balfour used—"and should hear and consider all matters, whether past, present, or future, laid before them"—remember these matters are not to bind the arbitrator in any way. He is only to consider them,—by either party relating to any such circumstances and should not be precluded by any legal objection from entertaining the same." There it is explained; he gives as an illustration the Report of Lord Balfour's Commission. He says, "it is obvious that such an important document should be open to the consideration of the arbitrators, but the Committee merely referred to it as illustrating what they mean."

(*Chairman.*) I am bound to say I cannot see how the Report of Lord Balfour's Commission can assist and properly assist any arbitrator assessing the value of the companies.

(*Mr. Balfour Browne.*) I think it could, and it would save a great deal of time. Take one finding—that the companies are to be allowed to go on only on one condition—that they provide more storage, more filtration, and things of that sort. That is a most material consideration for an arbitrator to consider—that in the opinion of that Commission the companies had something more to do in the interests of the public. It would to my mind affect the selling value of these undertakings considerably, and I say it should not be precluded; I daresay we could get at it in some other way. I daresay we could say, is it not a fact that in 1893 you had only storage for five days?—Yes. How much have you got now? So much. Do you think that is sufficient, when Lord Balfour's Commission thought it was not—or something of that sort. We could do it by cross-examination possibly. But why should not the report be referred to? What harm would it do? If your Lordship were sitting as an arbitrator, you would give only due weight to it. It is not to compel you—remember that is only the preamble, but now I come to the clause itself. What does it say: "There shall be paid by the Council for the transferred undertakings such a sum of money as shall be determined to represent the fair and reasonable value of the undertaking." Well, these words do it: What is the harm? It is the fair and reasonable value of the undertaking—it is to them and there is no question about that. Nobody would argue that for an instant that it is not the value to them. Then we add this, "together with such further sum as the arbitrator may award to meet the cost of investing such money in the event of no arrangement being come to, and the arbitrators in order to ascertain the sum shall inquire into and consider all the circumstances of the case and the contentions of counsel and of the companies respectively, and may deal with the same or any of them in such manner as they in their absolute and unfettered discretion think fit, on such terms and in such manner and in all respects

"as they think fair and reasonable and expedient, and as fully and effectually as could be done by Act of Parliament." Now, these words may or may not remain in when this becomes an Act of Parliament. I think it is a curious provision, but we are following well established lines. My friend, Mr. Littler, seemed to think that you could draw some distinction between the European Arbitration Act and the Chatham and Dover Arbitration Act, and that is because these were bankrupt companies. I do not know what the meaning of it is. Supposing they were, and these were solvent companies, why should an arbitrator when he is dealing with a bankrupt company have the power of an Act of Parliament, and when he is dealing with a solvent one not have it? The words are these, my Lord, from the European Arbitration Act, "The arbitrator may settle and determine the matters by this Act referred to arbitration, not only in accordance with the legal and equitable rights of the parties as recognised in the courts of law or equity, but on such terms and in such manner in all respects as he in his absolute and unfettered discretion thinks most fit, equitable, and expedient, and as fully and effectually as could be done by Act of Parliament." Those are the words.

(*Mr. H. W. Cripps.*) Are those the words you adopt?

(*Mr. Balfour Browne.*) The same words; it is taken from that Act, the same words occur in the Chatham and Dover Act; Lord Cairns was the arbitrator in one of these cases and Lord Salisbury in the other, and it clothed them with the powers of an Act of Parliament. Is there any harm in it? If so, it was equally harmful in those cases. Then my learned friend says that the last clause is unnecessary. With regard to the last clause in the Act, I think your Lordship said that you thought it was right that there should be a power to go to the court upon questions of law. Of course, if we got a man, we will say like Lord Cairns, because he is dead, or Lord Herschell, I daresay it would be quite unnecessary to state a case for the opinion of a superior court, but if we, on the other hand, suppose that some layman was appointed, I daresay he would like to have the opinion of the court upon some of the questions that might be raised. And this is what the Committee said: "The Committee think that it should be in the power of the arbitrators at any stage of their proceedings to obtain the decision of a competent court of law upon any questions which they may desire to submit for such decision, and the Committee will be ready, if necessary, to introduce words for that purpose into the Bill, in case they should declare the preamble to be proved." We have introduced them.

(*Mr. H. W. Cripps.*) I forget, and perhaps you will tell me this, but in the Lands Clauses Act is there a power of reserving a case specially mentioned?

(*Mr. Balfour Browne.*) No, there is not.

(*Chairman.*) But there is in the Arbitration Act.

(*Mr. Balfour Browne.*) Yes. The Arbitration Act is a general Act, and applies.

(*Mr. H. W. Cripps.*) But the question between you and the other side really depends upon this, that one wants to have the Lands Clauses Act and the other not.

(*Mr. Balfour Browne.*) Yes.

(*Mr. H. W. Cripps.*) Therefore, I want to know exactly what the Lands Clauses Act does not contain.

(*Mr. Balfour Browne.*) It does not contain that, but the general law of the Arbitration Act now gives power to state a case, and it has been held in a well-known case to apply to arbitrations under the Lands Clauses Act.

(*Mr. H. W. Cripps.*) It is the same thing now as if that clause had been in the Lands Clauses Act.

(*Mr. Balfour Browne.*) Exactly. I do not see that really there is much difference between this clause and what they would get under the Lands Clauses Act. The main difference is—

(*Mr. H. W. Cripps.*) I am inclined to think there is none whatever.

(*Mr. Balfour Browne.*) I will not go so far as that, because I think there is this, that under the Lands Clauses Act they could say: Well, there has been at any rate a practice to allow a percentage. I have heard it argued, although I think it is a bad argument, I have heard—I will not mention his name—a distinguished counsel not very long ago, say that the practice had

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arisen of allowing 10 per cent. for building land, and that that practice must be had regard to by the arbitrator sitting there. I denied it.

(Chairman.) If you got Lord Cairns, he would not be misled by that.

(Mr. Balfour Brown.) I would not mind taking the Lands Clauses Act with Lord Cairns. But after all, what harm is there in that clause? I see none. We have to make this absolutely certain by putting in—this will be my argument at all events—an allowance for re-investment. You are not to have any bonus more than that. That is the only thing that is made absolutely certain by that clause, and I will ask Parliament, if I get the chance, to make it certain that they do not get a bonus of 10 per cent. I do not think they deserve it. They have no right to it. If they get the fair and full value of the undertaking, they do not require 10 per cent. beyond that.

(Mr. H. W. Cripps.) They would say, and they have said, no doubt, that all these arbitrations are under the Lands Clauses Act, and why do you want there to be any difference from what has been done over and over again?

(Mr. Balfour Brown.) If you are right in saying that there is no difference, then I am not asking for any difference. But I have made it absolutely certain by that clause that they do not get 10 per cent. If you will make it clear in any other way, I do not care much about any other clause.

(Sir George Bruce.) What your clients are objecting to is the 10 per cent.

(Mr. Balfour Brown.) I do not want to pay the 10 per cent.

(Sir George Bruce.) Or any part of the 10 per cent.

(Mr. Balfour Brown.) Or any part of the 10 per cent. The compensation is intended as an indemnification and not a bonus. You are to indemnify them. I will pay them the full value of their works and anything they can show that they suffer. They ought to have that. I believe they ought to get only the full and fair value, and if they get the full and fair value it will include the cost of re-investment. Again, I will tell your Lordship another reason why I do not want the Lands Clauses Act, and it is a most important reason. Under my clause which I have just read, I have one arbitrator and one arbitration.

(Mr. H. W. Cripps.) That might be specially provided for.

(Mr. Balfour Brown.) Quite so; something must be done. I do not want eight arbitrators or eight arbitrations, or 16 arbitrators and 16 arbitrations, or 16 arbitrators and eight umpires. It ought to be done by one man.

(Mr. H. W. Cripps.) I think it is almost obsolete advocating that.

(Sir John Dorington.) If you had only one Bill, you would only have one arbitration, would you not?

(Mr. Balfour Brown.) No, not one Bill.

(Sir John Dorington.) Last year you had eight Bills, I believe.

(Mr. Balfour Brown.) Yes, eight Bills, but we proposed the same machinery in each Bill.

(Sir John Dorington.) Quite so, but had you gone under the Lands Clauses Act you would have had eight arbitrators.

(Mr. Balfour Brown.) Yes.

(Sir John Dorington.) Whereas if you had only one Bill, you would have only one arbitration.

(Mr. Balfour Brown.) No; take, for instance, a railway Bill, we will say a railway Bill for making a line 100 miles long. In that case every owner has the right to an arbitration in every case, whereas, what we want is one arbitration to ascertain the value of each of the eight companies.

I have some further references, but I do not think I will read them, they are not so essential.

Now, my Lord, I have already emphasised the necessity first with regard to the sinking fund, and secondly accumulating to the amount of 5 millions in 1930, and also with regard to these non-enhancement clauses on immediate purchase.

Let me say one word, and only a word, with regard to some of Mr. Pember's calculations. He said the equalisation of rates was to be looked at as a financial

matter as against us, and he took the figure 250,000*l*. He called it a loss, my Lord; it is no loss. It is as broad as it is long. If we did equalise the rates in the first place, it would not be 250,000*l*. because that was over the whole water area of London. London itself would lose 160,000*l*. according to our calculation. What would it be? It amounts to 1·07*d*. on the rates. Suppose we do and are willing to do it—supposing we are willing to take it on the rate instead of in the water. Why should not we? Can you look upon that as a question of the financial expediency of purchase? Not at all. It has nothing to do with it. We may tax ourselves as we like, but Mr. Pember seems to think that because we propose, and I think rightly, to equalise the rates, we would be the losers to that extent. We would not. It is in one pocket instead of the other. That is all.

(Chairman.) You would lose water income to that extent.

(Mr. Balfour Brown.) True.

(Chairman.) And you would have to replace it by rate.

(Mr. Balfour Brown.) To replace it by rate. Supposing we did this which one corporation does to-day in England—it does not charge anything for water—could you take that as a financial loss? They put it in the rates, that is all, and that is what we should do. But the anomaly of charging differing rates in London would be swept away. Then the next figure he gave was 30,000*l*. for the cost of severance. I do not know where he got it, there is no evidence about the cost of severance, and if there was no severance there would be no cost. If there was severance, I suppose that it would not all fall upon us. It would also fall upon the persons who wanted to sever. But if, on the other hand, we were to go on supplying in bulk the outside districts, there would be no loss on them. Again, he also pointed out the disappearance of savings. He put that against us. I do not know what he meant. I think he came back after lunch and corrected himself. I think he had to put the two together and got 338,000*l*. as what the loss per annum would be to his satisfaction, and capitalised it at 11 millions. I was going to say that he used a word repeatedly with regard to some of our evidence—he said that it was fatuous. I do not like to do that, but it is grotesque. I think he came in after the adjournment and corrected himself; his last thought was better than his first. He said, "I want at once, before we go any further, to apologise for a "most curious folly that I committed"—if he did that I should not have said a word, but it is not only that folly. The 50,000*l*. is one folly, and the 250,000*l*. is another, because he is making us pay what would not fall upon us at all to the extent of 100,000*l*. It falls upon the outside area. It is only 161,000*l*. which falls upon London, and with regard to the cost of severance, as I say, if there is no severance it will never take place.

(Chairman.) Then the County Council plan would be to equalise the rates if they got the whole in London, but to leave the old rates outside.

(Mr. Balfour Brown.) We should not have to do with the rates outside.

(Chairman.) Then you are assuming severance.

(Mr. Balfour Brown.) I am assuming severance. I am assuming that the water authorities come to us and say, we are not going to be supplied by London. We want a million gallons a day. Supposing Willesden, or some authority did want it, then we should say, certainly, you pay us so much per thousand gallons, and we will supply you. There is no severance then of pipes and no cost of severance, and we should probably get enough at any rate to recoup us for the water we were supplying.

(Chairman.) Do I understand that the County Council still consider themselves morally bound to make these concessions to the metropolitan counties that they did make on the last occasion?

(Mr. Balfour Brown.) As to the form of agreement, I know nothing, but as to the fact that we should be quite willing to allow the county of Surrey, with which we had an agreement, to come in and take what we promised in the agreement to give. I believe we are still bound to do that.

(Chairman.) That is so in your proposed Bill, I think.

(Mr. Balfour Browne.) I think so.

(Chairman.) It strikes me, on reading that Bill, that it assumes rather that in all cases there would be a severance, but you did not provide at all for the alternative of their wanting to remain as they are at present.

(Mr. Balfour Browne.) I do not think that it was in the Bill, but I do not remember at this instant. But at any rate we shall be quite willing. Our policy is this, and it would be absurd of us to deny the position of the other County Councils—we say we are the local authority of London, and that we ought to have our water supply. They are the local authorities of the outside districts, and they ought to have their water supply. It is quite true that county councils in England have not been clothed with water powers up to the present time. County councils in Scotland have, and I do not see why it should not be so in England for this purpose, but we do not deny that the counties of Surrey or Kent should be masters in their own house, just as we claim the right to be masters in ours.

(Mr. H. W. Cripps.) At the same time you are willing, if they think otherwise, to go on as you are.

(Mr. Balfour Browne.) Certainly.

(Sir John Dorington.) You said yesterday, under the head of competition, that if competition were open to the New River Company, it might have gone on and helped the East London Company, and then you would have saved 11,000*l*.

(Mr. Balfour Browne.) Yes.

(Chairman.) Would that 11,000*l*. that was referred to be in the county of Essex, or the administrative county of London?

(Mr. Balfour Browne.) I think it was all in London that 11,000*l*. All the 11,000*l*. that I spoke of was in the other district of South London, where, if the West Middlesex Company had gone in and supplied, instead of the Lambeth Company, there would have been a saving of about 11,000*l*., and that also was in the administrative county of London. I am told, my Lord, that in answer to your question, I may say that we still consider those agreements that we made

with Surrey and Croydon financially fair and reasonable agreements, and, therefore, I suppose we should be willing to carry them out.

Now, my Lord, I think practically I have dealt with the case so far as I want to. I say control must fail because it would ruin the companies. I say purchase has been sanctioned by hundreds of precedents. It is in public legislation, witness the Public Health Act. I say purchase has been recognised as a necessity by this one authority, the county council of London, in all the Bills that I have been referring to, and in all the reports of these Commissions and Committees, by the Government of 1852, by the Government of 1880, by Sir William Harcourt's Committee—by all these that I have mentioned, and in every case where a Committee has put in a clause for non-enhancement of value by reason of works, it has been recognised over and over again. Are you going to reverse all that by a decision that it is not financially expedient that we should buy? I think not, my Lord. Are you going to over-ride the wishes of the population of London, who really after all are the consumers, whose interests you are asked to safeguard? My Lord, you may by your report over-ride those wishes for a time, but in the long run those wishes will prevail.

I can only say I am sorry I have been longer than I anticipated.

(Chairman.) Not at all, you have kept well within bounds. There is a return we desire to have. It is a return showing the county and the rateable value of each parish, outside the administrative county of London, supplied by the Metropolitan Water Companies, and the number of supplies in each such parish. Could that return be compiled and checked by Mr. Cripps. I will hand a note of it to you, and you will see if the return can be supplied.

(The return was subsequently supplied. See Appendix X, 4.)

(Mr. Balfour Browne.) I am asked to say, my Lord, for my clients, they are exceedingly obliged to all the members of the Commission for the courtesy and kindness they have shown, and for the patience with which the inquiry has been conducted.

(Chairman.) You have all been of very great assistance to us. We adjourn *sine die*.

Mr.
Balfour
Browne.

23 Mar. '99.

ROYAL COMMISSION ON WATER SUPPLY WITHIN THE LIMITS OF
THE METROPOLITAN WATER COMPANIES.

I N D E X.

PART I.—INDEX TO THE MINUTES OF EVIDENCE.

PART II.—ANALYSES OF WITNESSES' EVIDENCE.

ROYAL COMMISSION ON WATER SUPPLY WITHIN THE LIMITS OF THE METROPOLITAN WATER COMPANIES.

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MORE, Charles James, Engineer to the Thames Conservancy. (See Questions 23,378-23,656.)

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MORRIS, William, Engineer to the Kent Waterworks Company. (See Questions 16,733-16,806.)

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MULLEN, Robert Gordon, Clerk to the Guardians and Sanitary Authority of the Bromley Union. (See Questions 12,830-12,870.)

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MURPHY, Shirley Forster, Medical Officer of Health for the County of London. (See Questions 8077-8176).

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MUSGRAVE, Christopher George, Chairman of the Leyton Urban District Council. (See Questions 13,373-13,432.)

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NORMAN, Frederic Henry, Clerk to the Urban District Council of Bromley. (See Questions 12,793-12,829.)

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PARKES, Thomas Farmer, Engineer to the Lambeth Waterworks Company. (See Questions 15,841-15,880.)

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PEMBER, Edward Henry, Q.C., Address on behalf of the Metropolitan Water Companies. (*See* Vol. II., pages 598-648.) (*The references given are to pages in Vol. II.*)

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BESTLER, James William, Engineer to the Southwark and Vauxhall Water Company. (*See* Questions 15,277-15,361; 15,807-15,840; 25,280-25,621.)

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SEARLE, James, Clerk to the New River Company.
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SMITH, Urban Armstrong, Surveyor and Engineering Adviser to the Hertfordshire County Council. (See Questions 29,736-30,050.)

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STONEHAM, Allan, Official Auditor. (See Questions 14,065-14,211.)

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TENDRON, Frederic, Chairman of the Grand Junction Waterworks Company. (See Questions 26,263-26,569.)

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ROYAL COMMISSION ON WATER SUPPLY WITHIN
LIMITS OF THE METROPOLITAN WATER COMPANIES

MINUTES OF EVIDENCE

TAKEN BEFORE

HER MAJESTY'S COMMISSIONERS

APPOINTED TO INQUIRE INTO THE SUPPLY OF WATER

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WITH

INDEX TO THE MINUTES OF EVIDENCE LAID BEFORE THE COMMISSIONERS

VOLUME II.

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